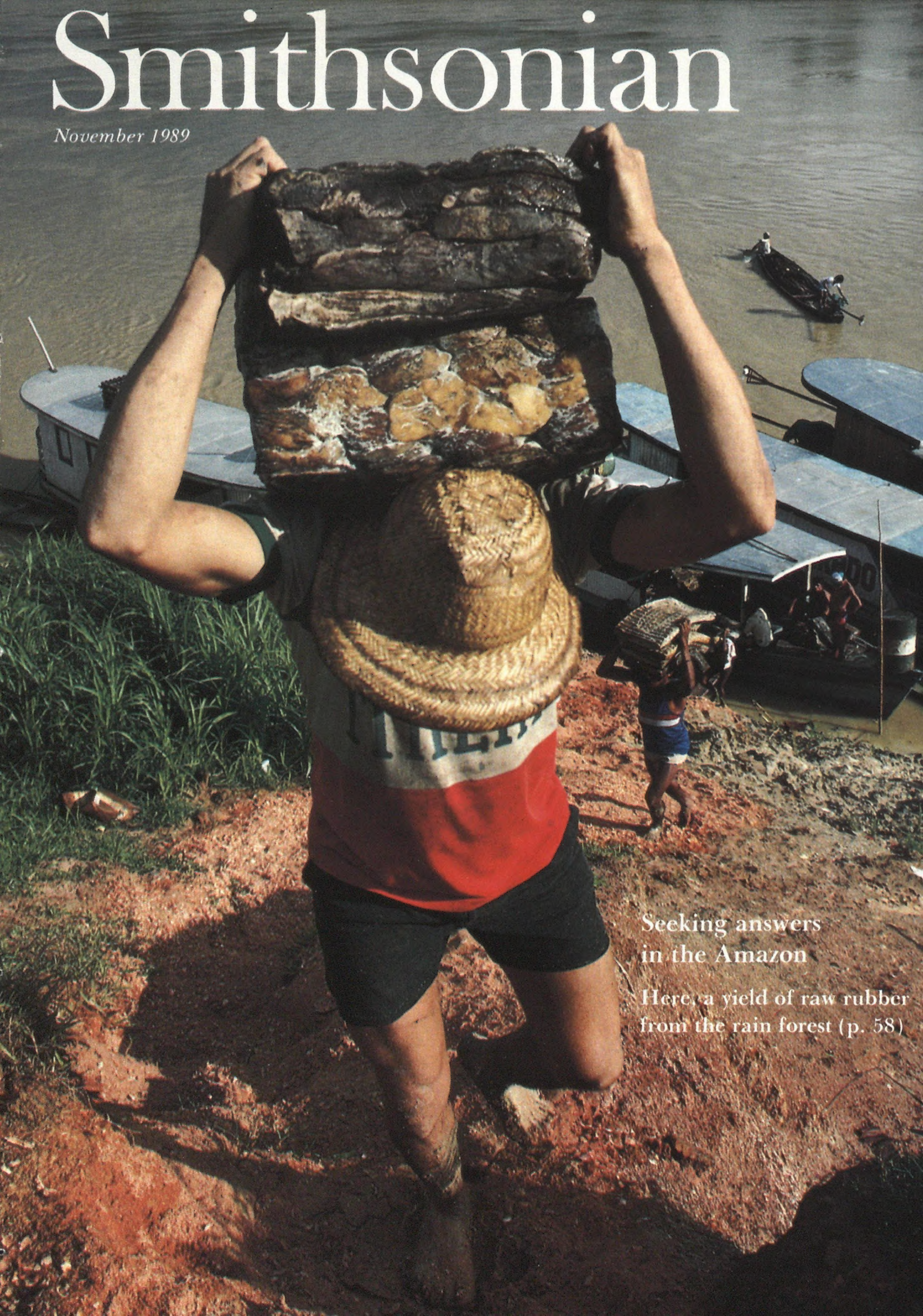
Smithsonian

November 1989



Seeking answers in the Amazon

Here, a yield of raw rubber from the rain forest (p. 58)

When you've been the winning bidder at Sotheby's,

crossed the Atlantic in 3½ hours,

and watched from a box at centre court,

you know how things should be.

November 1989

Smithsonian

Volume 20, Number 8

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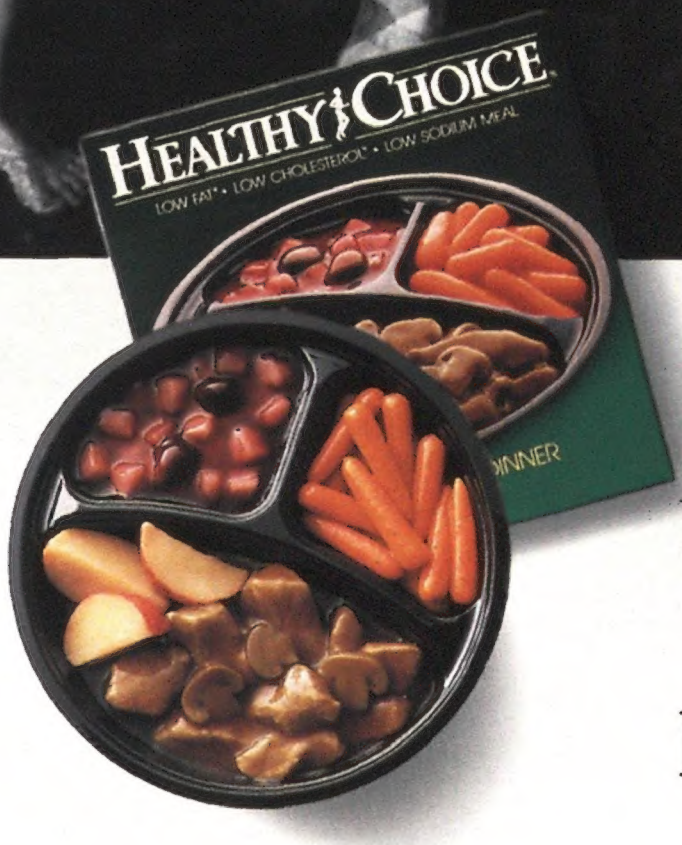

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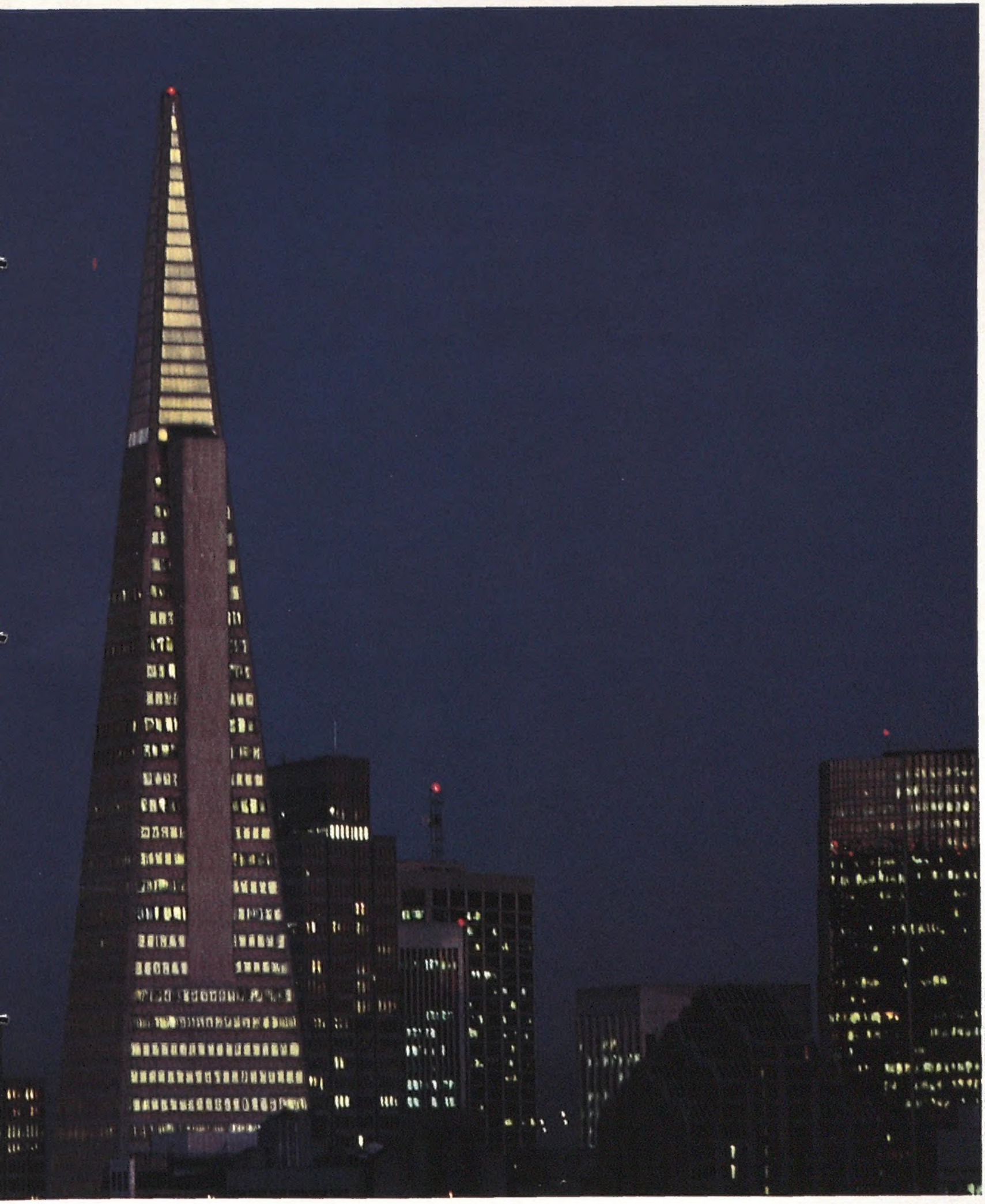

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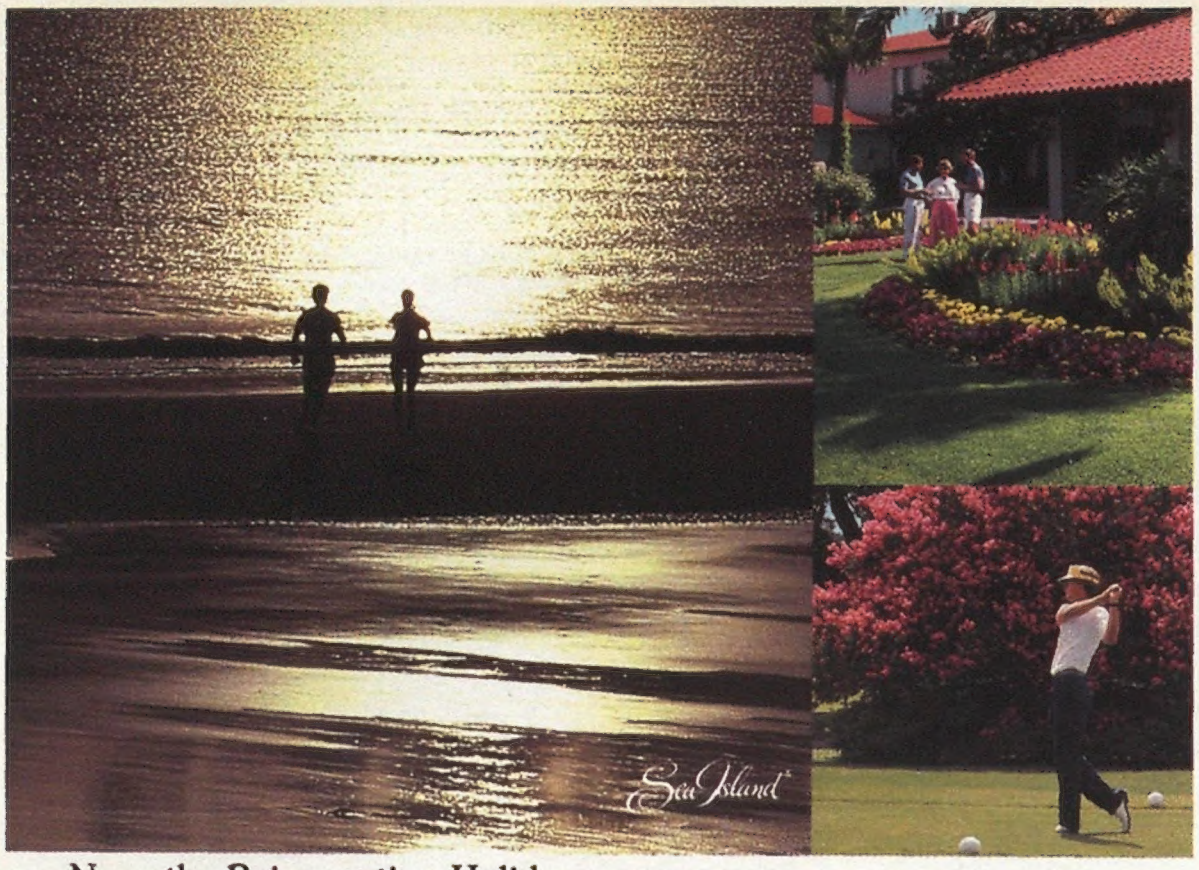

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Secretary Adams' comments

Smithsonian horizons

A new Smithsonian exhibit looks at the opportunities and rewards for both genders in American life

Museum exhibits work best when they have a tendency to get under the skin of some of their viewers. Their designers, to puncture our passivity or complacency, can take surprising turns into fresh territory, highlight rather than suppress the tensions between opposing interpretations, make risky, seemingly counterintuitive leaps from a smooth narrative to macro- or microlevels of philosophical abstraction, or bring us face-to-face with jarring reminders that the past was, after all, another country.

A fine illustration of the revelatory superiority of objects to words for driving home some lessons is the newest exhibition at the National Museum of American History, "Men and Women: A History of Costume, Gender and Power." Its basic thrust is to distinguish "'sex,' meaning the biological natures we are born with, from 'gender,' meaning the characteristics that we take on as we learn to be 'masculine' or 'feminine' as our society defines these ideas," and then to focus on the historical plasticity of American notions of gender.

Men and women may have always lived within different frameworks of rules for appearance and behavior, but it is exciting to discover how much is historically derived and how little is enduring or "natural" about these frameworks. In 18th-century upper-class society, for example, both sexes exhibited a preoccupation with changing fashion, expressed in lace, jewelry, and brocaded or embroidered fabrics.

But in the 19th century we find this aristocratic self-indulgence fading as far as men were concerned. A preoccupation with decorations and colors persisted longer among the military and the "lowlife" Bowery Boys, but well before midcentury men of affairs began to cultivate a drabber image of hard work and self-discipline.

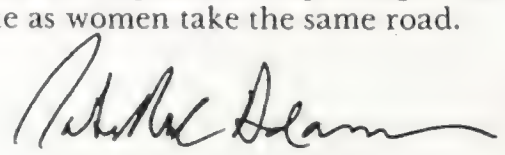
Household tasks did not diminish but became increasingly invisible as men's employment shifted toward offices, stores and factories. Fashion became feminine, and femininity became associated with delicacy, decorativeness, limited abilities, and restrictiveness in clothing as well as in range of socially acceptable activities. ("We believe in the petticoat as an institution older and more sacred than the Magna Carta," proclaimed *Harper's Magazine* in 1857.)

Young boys' clothing, at one time almost indistinguishable from that of girls, was gradually purged of anything feminine. Women's sphere, apart from the cultivation of personal beauty, was to uplift, educate, and civilize men and children. Few or none of these traits, needless to say, were attainable by immigrants, slaves, frontierswomen, or those in working-class families.

By the early 20th century, with Teddy Roosevelt as a prototype, the *Boy Scout Handbook* could declare that "*manhood*, not *scholarship*, is the first aim of education." Overcoming numerous obstacles, not a few of them involving supposed immodesty in clothing (as especially in swimming), women followed men into a growing emphasis on athletics and sporting activities. The new ideals of physical prowess and independence that this invoked carried with them the seeds of a radical challenge that has not yet lost its resonance: Who controlled women's bodies?

At about the same time, stereotypes exemplified by clothing and styles of personal adornment were fundamental in the entry of women into professions like teaching and nursing. Nuances of the same kind, accompanied by an increasing latitude of personal choice and ethnic expression, continue to accompany women's efforts to attain fully unsegregrated employment opportunities at comparable standards of remuneration. Issues of changing costume and appearance, far from merely providing quaint examples of our selective amnesia, thus touch on some of the vital nerves of our social relationships.

Curator Barbara Clark Smith, the creator of the show, argues strongly that gender differences in opportunities and rewards, or more fundamentally in social, cultural, political and economic power, undergird the contrastive sets of rules for appearance and behavior. Probably so, although objects that must be the substance of a museum display can testify directly to gender stereotypes but only very indirectly to their causes. Seeming to reflect only "consumption" rather than "production," costumes may lend some reinforcement to the stereotype of men's activity and women's passivity. A concentration on women's roles in housekeeping first contributed to industrialization, presumably the source of that power, by supporting the entry of men into the labor force. Much more recently, one might hope that the imbalance of power is beginning to dissipate as women take the same road.



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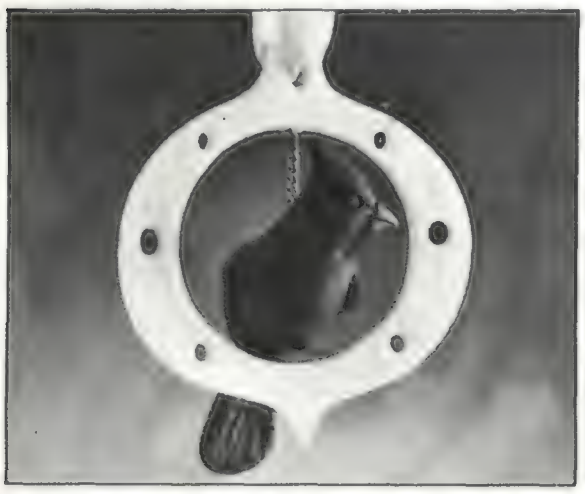

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Letters to the Editor

Wang Yani

Dear Sir: I hail not only the genius of this extremely talented young girl, but also the genius of her farsighted father. As an author and illustrator of children's books, I often visit schools and am shown drawings made by children. Many are extremely well done and very imaginative. But alas, negative criticism from teachers is not at all encouraging to children. Given repeatedly, it will soon discourage a budding talent. I am sure many children the world over would blossom if only encouraged in what many adults call "childish scribbles."

Christa M. Chevalier
Enosburg Falls, Vermont

Dear Sir: Recently I picked up SMITHSONIAN for the first time in my life. I expected it to be dull, with boring articles. Then the pictures painted by Yani caught my attention. I now know that your magazine has articles even teenagers will enjoy.

I'm 15 years old, thinking of making a career in art, and so reading about young talented artists that make it big fascinates and inspires me.

I share your excitement for this marvelous 14-year-old artist. Maybe someday she will become as popular as Monet and Picasso!

Nichole Rainey
Tipp City, Ohio

Rural hospitals

Dear Sir: Mr. Margolis' very personal experience with a small, nonurban hospital is just one example of what many communities have grown used to in this

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country. These facilities not only provide health care for a diverse group of residents, but are often the social, educational and economic backbone of a community as well.

Many on Capitol Hill, in both houses of Congress, are working to save these national treasures. Yet much more effort is needed to reverse the trend of hospital closings before any more rural elderly or children suffer or die.

Ike Skelton
Chairman, Congressional Rural Caucus
U.S. House of Representatives
Washington, D.C.

Dear Sir: I am one of 33 staff R.N.'s in a 350-bed Seattle hospital. Caring nurses and loving people are not restricted to small towns. Here at Providence no one is a number, no one is ignored, isolated or allowed to slip through the cracks. We wash their hair and listen to their war stories; hugs are frequent and free. I cry with them, attend their funerals and even walk their dogs! I love working here because of the high level of individual care.

Because of costs, we have taken on the respiratory and physical therapy departments. Each day we complain about the money, but each day we return.

Elizabeth Akar
Seattle

Dear Sir: I teach school in rural northwest Arkansas, in the Ozarks. In June, my wife was admitted to Carroll County General Hospital in Berryville to have our first child. The admissions clerk, the OB nurses, the cook, the doctor, everyone, treated us as if we were the only ones in the hospital.

In my 35 years, I've never experienced more love and respect in an institution. The day after our healthy baby boy was born, the nurses brought into my wife's room a table with a tablecloth, china and a red rose, and served us chicken cordon bleu with all the trimmings, including homemade strawberry pie—by candlelight!

Jeff L. Middleton
Green Forest, Arkansas

Dear Sir: My rural hospital encounter occurred after having broken my leg while backpacking in Isle Royale National Park. The closest hospital was in Hancock, Michigan, a rugged 12 hours away. As thankful as I am for the Boy Scout troop's escort along the trail and for the ranger's first aid, I am most

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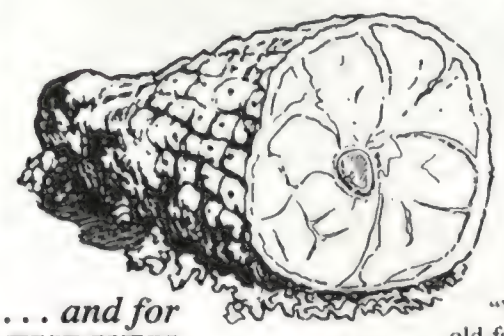

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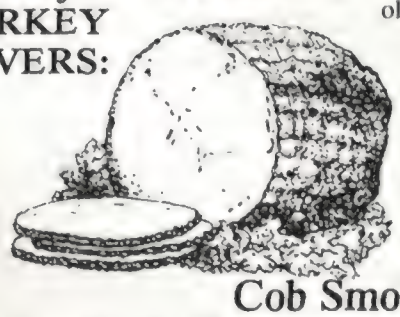

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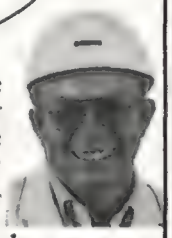

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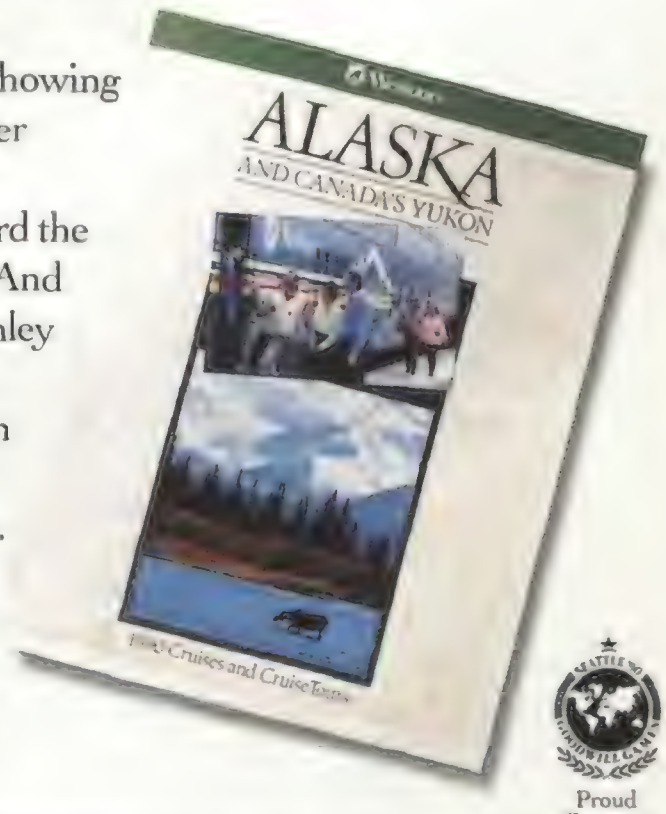

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grateful for the human warmth and genuineness, as well as medical expertise, of Portage View Hospital's staff.

My suburban-city mentality would never have expected an orthopedic surgeon to stroll in at 10 P.M., ten minutes after he was consulted by the ER physician.

We tired and anxious strangers were made to feel at home. Once my leg was encased in a cast, the physicians helped my husband locate a motel!

The experience makes me want to move. I hope such a rural community hospital will be there when I do.
Kathleen Curzie Gajdos
Chadds Ford, Pennsylvania

Dear Sir: Your article overlooks the difficulty of staffing our country's rural hospitals. My company staffs the emergency department of Grant Memorial (mentioned in your article) and other small ERs like it. As a recruiter, it's hard to get past the geographical remoteness to introduce the need for skilled and caring doctors. Sad, because both physicians and patients are truly missing out.
Suzanne Christy
Coastal Emergency Services
Arlington, Virginia

Yellowstone

Dear Sir: As a resident of Yellowstone Park, I've had the fortunate opportunity to watch the many changes from last summer's fires. I first felt a great sense of loss, watching my surrounding environment burn and knowing that in my lifetime Yellowstone would never be the same. But now, I realize change is the true beauty of the fires. It is not a loss, nor is it a rebirth, but Mother Nature's way. Just as the seasons change, just as the sky forever changes. And what a dramatic and beautiful change the fires have made.
Janet Lewis
Yellowstone National Park, Wyoming

Craters

Dear Sir: A century ago the English astronomer Norman Lockyer announced what he called his meteoritical hypothesis: all celestial bodies formed from meteoric stones swarming throughout the immensity of space. Lockyer, a self-assertive, disputatious figure, thrived on controversy. His announcement quickly generated enthusiastic support from his friends, of whom he had not a few, and

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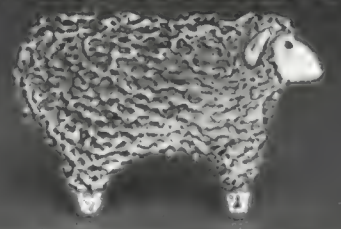

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violent dissent from his detractors, of whom he had many.

While that debate raged, the satirical magazine *Punch* could not resist publishing a story that began: "Mr. Norman Luckier, the eminent astronomer, was walking in his garden. Suddenly he was staggered by a sharp blow on the head. Something fell at his feet. It was not his head. He picked it up. It was a meteoric stone. This started him thinking."

And whence came this "meteorite" that fell to Earth? A nasty boy next door had heaved, unerringly, a rock at Luckier's head.

And nasty astronomers soon demolished unlucky Lockyer's hypothesis.

Kenneth Weitzenhoffer
Brooklyn, New York

Dear Sir: In late August a group of us spent a week backpacking in Sequoia-Kings Canyon National Parks, where we watched the end of the latest spectacular meteor shower. At the time I thought, How close the sky looks tonight. Upon my return, greeted by James Trefil's article, perhaps I should have thought, Phew, that was close!

Nervously looking skyward,
Michael B. Endicott
Portola Valley, California

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Dear Sir: I was privileged to witness the spectacular Leonid meteorite shower of November 17, 1966. From a pinpoint in the sky, the meteorites streamed through and spread out in numbers that I estimated to be hundreds per second. Train crews in the desert areas of western New Mexico estimated the light produced by this phenomenon to be equal to that produced by the moon at midphase.

Bill Kain
Tucson, Arizona

The Königsberg

Dear Sir: That "Jungle Man" Pretorius should have twice won the second-highest British decoration for gallantry in the face of the enemy is unusual. That, as a mere major, he was made a Companion of the Order of St. Michael and St. George, a distinction normally accorded outstanding ambassadors, is almost unprecedented, and reflects the astonishing courage and patience he expended on plotting in detail the route taken by the *Königsberg* as it retreated up the Rufiji River, establishing, under the noses of the Germans, that monitors could make the passage upriver.

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As for Colonel von Lettow, his account of his East African campaign was published by Hurst and Blackett in London in 1920. In the early '30s he was honored at a public dinner in London; and in the difficult post-World War II years, food and other parcels sent by Smuts to him in Germany helped ameliorate his living conditions.
M.R.J. Wyllie
Keswick, Virginia

Wild boars

Dear Sir: Several years ago I was inveigled into sleeping under the stars on Santa Catalina Island. There was some talk of wild pigs being a part of the indigenous population. Very early in the morning I awoke to find one of the beasts standing over me. Seen from ground level, it was enormous.

I ducked down into my sleeping bag, reflecting on the inadequacy of nylon as a protective substance. The pig must have decided my cowering did not constitute aggression, for it went away.

Later, we found our heavy-canvas food bags ripped to shreds. The animals ate everything but some ham.
Robert E. O'Connor
Madison, Wisconsin

Megaliths at Carnac

Dear Sir: When I first beheld Carnac menhirs I felt myself in the presence of something immensely ancient and enigmatic. Since then, my interest in them and their lore has been abiding.

As one charming local legend has it, on Christmas Eve the stones all march in procession down to the sea to drink.
Joan Datesman
Newtown, Pennsylvania

Phenomena

Dear Sir: As manager of a local aquatic facility, I want to emphasize that all who wish to try the wonders and joys of peering at the watery underworld should enroll in a snorkeling class. Here, one can learn how to choose the proper equipment and gain the skills needed for *safe* use of the equipment.

For safety's sake, *always* bring a friend when snorkeling or swimming in open water. A partner can help out in trouble or summon trained rescuers, if necessary. And always exercise great caution in allowing a child to use snorkeling equipment. The airtight face

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mask can slip down a small face to cover the mouth and nose.
Trudy Fraase
Dickinson, North Dakota

Running shoes

Dear Sir: Athletic shoe sizes go from 7 to 12, including all half sizes, then jump to 13, skipping 12½. Apparently it is assumed that "long foot" means "wide foot"; not so. My width is B. Therefore the ads for "extra wide" (EEE to EEEEEEE) make me feel a little paranoid.

An additional irritation: manufacturers have gone to leather tops. Canvas or nylon ventilates naturally; why make leather uppers and then punch holes in them to get ventilation?

What this country needs is a good canvas-top, size 12½, B-width tennis shoe. Please, somebody make it for me. At a reasonable price.
Thomas J. Hummel
Cincinnati, Ohio

Dear Sir: Richard Wolkomir was interested in what it all means "to the average buyer" of athletic shoes. My main concern is to obtain a pair that *fits.* With all the hoopla about built-in, high-tech springs and computers, did you ever try to get a pair in a width other than medium? It's nice that four colors are available, but how about four widths? With a foot wider than M, I find myself sloshing fore and aft in shoes too long, just to get sufficient width.
Eugene V. Kosso
Verdi, Nevada

Dear Sir: A slogan for the high-tech running shoes that use a computer chip to measure speed: "These are the soles that time men's tries."
Jack E. Jayne
Kaukauna, Wisconsin

Around the Mall

Dear Sir: My sister Winnie edited the 1936 *KAW*, one of the Washburn College yearbooks designed by Bradbury Thompson.

On my parents' theory that Winnie couldn't get into too much trouble if encumbered by her little sister, I got to go to a national yearbook convention in Chicago. Brad chaperoned the Washburn delegates. Not for a moment did he act bored or put out when he had to baby-sit me while the delegates attended their dinner dance. As for me, I was practically mute with awe in the company of such a handsome older man (he was older by about five years, as I recall).

I wonder if he still recommends a sloe gin fizz to a first-time sipper?
"Weezie" Brown Smith
Portland, Oregon

Encyclopedia of the South

Dear Sir: In your Mythic South, we meet the "good old boy." It ain't "old," it's "ole." Don't y'awl know nothing? Of course, it may have been jest plain ignorance, since a whole lot of people don't rightly know how to talk real good.

Jest to keep y'awl straight I will conjugate "ain't" for you: ain't (as in "ain't she pretty?"); tain't (as in "tain't so"); hain't (as in "I hain't agoin do it nohow").
Kenneth Lefevre
Santa Cruz, Bolivia

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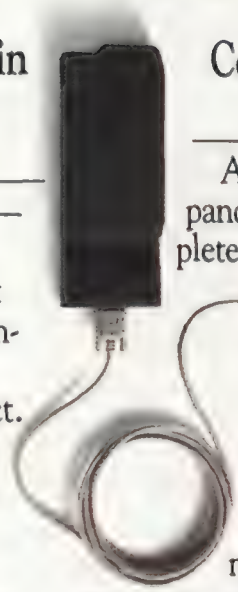

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Around the middle of this month, the Smithsonian Castle will fully reopen in its new capacity as one of the world's great greeters. It will rank right up there with the Statue of Liberty, the Eiffel Tower and the Prince of Wales.

We've all been depressed by the Castle's forlornly unused appearance, the scaffolded front door, the dusty, boarded-up interior, echoing with jackhammers and power saws. Now it's back to its old self—and more.

Behind the familiar Victorian facade, the Castle's Great Hall has become an ultramodern welcomer of visitors, not just to the Smithsonian, but to all the Mall area—the heart of the nation's capital. Here will flock the tour groups from Germany and Japan, the high school seniors from Omaha, the family from Albuquerque, the lawyer from Philadelphia and the lady from Dubuque, now at the rate of a million and a half of them a year. The refurbished Castle is ready and willing to welcome double that number.

Let's say you're one of them, a bewildered visitor who's come all the way from Wenatchee, Washington, determined to sample *this* Washington before hurrying back to your apple orchards and soaring Cascades. You approach the Castle from the Mall, passing the statue of Joseph Henry, and stand before the old sandstone porte cochere. Here generations of carriages and limousines have deposited kings, queens, emperors, princes, presidents, prime ministers and a pope. Now flags of 159 nations wave above the crenellations, a nod to our thousands of overseas visitors.

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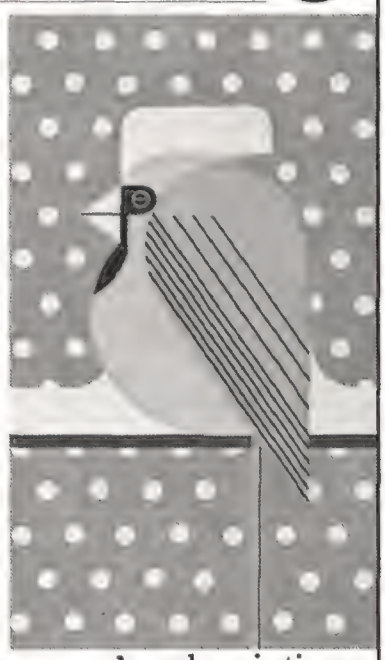

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wind past suitably Victorian wrought-iron garden benches before entering the north stairhall. The western path differs from the eastern in that it doesn't have steps. It's a long, gently inclined ramp built to provide easy access for wheelchairs and strollers.

Inside the front entrance, you pass the crypt of James Smithson, where the founder's bones must surely lie more serenely at rest than ever before. Now, opposite this ceremonial chamber, is a locker room where you can stash briefcase or diaper bag. You then walk across the newly laid Victorian tile of the north stairhall (the tile is authentic to the period, having been rescued some years back from the 1880s building that used to stand where the Hirshhorn Museum is now), past the beautifully restored staircase, its decorative metalwork agleam against a new coat of green-black paint, and on into the Great Hall.

In the old days a single archway led visitors from the north stairhall into the Great Hall. Now there are three archways. "That's the only architectural change we've made to the historic structure," said Mary Grace Potter as she led me through the new works a few weeks ago, before the job was quite finished.

Mary Grace, an old friend and fellow aficionado of Castle lore, is director of the Visitor Information and Associates' Reception Center. She and her staff use the acronym VIARC, even though, as she says, "it sounds like a newly discovered disease." Anyway, it's the official name for the group that carries out the Institution's task of welcoming and informing everyone who comes by.

"The Smithsonian Information Center project got started about five years ago," Mary Grace told me (*Around the Mall*, April 1987). "We felt we needed to improve our briefing of visitors. Also, we needed to supplement what the city of Washington is doing and plans to do about guiding tourists."

I recalled the many times I have walked past bewildered out-of-towners, standing between the Freer and the Castle, facing the American History and Natural History museums, who have asked me frantically if I could point the way to the Smithsonian: "We've only got an hour to see the collection they're supposed to have there."

Here, at last, is the place to set them straight. "This Center offers visitors the opportunity to make informed choices about the use of their time with us," says Mary Grace. "To this end, the Center will open daily at 9 A.M., a full hour before the museums."

You (the mythical traveler from Wenatchee) enter the Great Hall and stare at its grand old columns, handsomely faux-marbled in tones of gray, soaring from a freshly carpeted floor. In the center of the hall, you face a broad information desk, four-sided like the old British square, to meet the onslaught of thousands of questions. Here you may also refer to two computer monitors. Their rolling screens list everything that's going on at the Smithsonian museums and the National Zoo on the day of your visit: lectures, films, special events.

You are gently prodded toward the 20-minute orientation video about the Smithsonian, shown in two theaters at the east end of the hall. These soundproofed rooms now take the place of offices. "This space was originally part of the Great Hall," Mary Grace explained. "We've simply reclaimed it."

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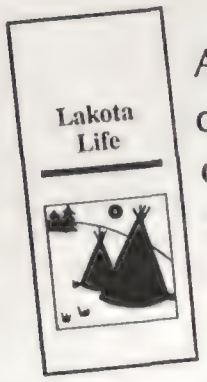

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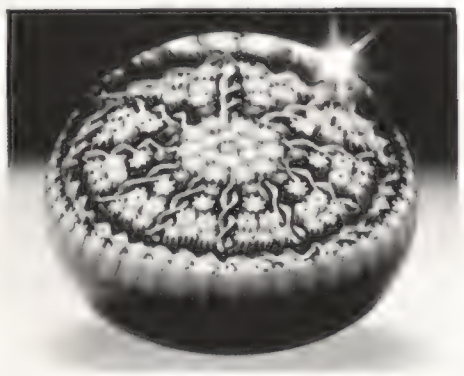

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Each theater holds 70 people. One is equipped for getting the message across to the hard of hearing. Since the shows are staggered, you wait no longer than ten minutes to get in. You find comfortable seats at the rear and equally inviting upholstered benches toward the front. "The benches provide more flexible seating, especially for groups of children," said Mary Grace. "Children like benches and they like to crowd up."

It's a wonderful show. It ends with a little plug for this magazine, so that when you leave the theater—by a different door—you presumably have the magazine in mind. By the rarest coincidence you find yourself surrounded by spectacular SMITHSONIAN covers framed in cherry, and as you reenter the Great Hall you face a desk at the far end where volunteers lure you, Sirenlike, into subscribing. That's fair warning.

You're also lured toward two models of Washington's "monumental core"—the center of the District of Columbia. You can study this bird's-eye view of the Mall and its surroundings, and you can see where you are in the context of the city, where the other Smithsonian buildings are, and how much walking you face to see our treasures and the capital's landmarks.

Backing up these models are a couple of 5-by-7-foot electronic wall maps, wired for 68 attractions. Push a button for the Washington Monument, for example, and it lights up on the map. And as if all this isn't enough, you've got "touch-screen" information programs that not only offer you even more options, but are a lot of fun to play with because they're interactive—that is, you can control what you see.

These videodisk programs appear on monitors housed in elegant cherry kiosks, fine examples of cabinetwork, which, according to Mary Grace, Smithsonian craftsmen welcomed as a chance to show their skill. Each kiosk has a screen. Some are positioned up high, others low enough for youngsters and handicapped visitors. Four kiosks are programmed for "Capital Attractions," offering you a choice of about a hundred things to see in Washington, from grand statues to quiet gardens, how best to reach them from the Castle, what hours they're open and what you'll have to pay to get in. The other nine kiosks give you similar information about the Institution.

I tried the latter program while it was still being worked on. You get a "menu"

New Smithsonian Information Center offers interactive video to assist visitors.

to choose from while music plays and a soothing voice bids you "Welcome to the Smithsonian," and goes on about "a fascinating kaleidoscope of history and artifacts, people and their activities. . . ." One of your first choices is language: Arabic, Chinese, English, French, German, Japanese or Spanish? Arabic intrigued me. I chose it, putting my finger on the screen just where that option glowed. Sounds easy, but I managed to miss twice before I got it.

The same English narration began, but this time there were Arabic subtitles. I marveled, as one always does, that a great tangle of writing appeared to indicate a single English word, and then a single symbol seemed to do the job of a whole English paragraph.

You can keep on touching the screen for an almost endless number of options. If you want to go see the Hope Diamond, hit "Where Do I Find" and then "H," and it will show up along with a lot of other "H's." Touch "Hope Diamond" and you'll learn that it's at Natural History. Touch "Museum of Natural History," listed under "Guide to Museums," and you'll find it highlighted on a map and hear that it reveals the "wonders of life and the splendors of nature. . . ." Now all you need do is walk on over and see it.

"Visitor Services" offers options that use international symbols to assist you with everyday things like running short of money or wanting to mail a postcard. Touch a dollar sign and you get a map showing the locations of money-dispensing machines (I didn't realize the Smithsonian had them). Touch a sketch of an envelope and there's the Institution's only post office—at the Museum of American History.

I played with the video until I noticed nearby workers wincing every time they

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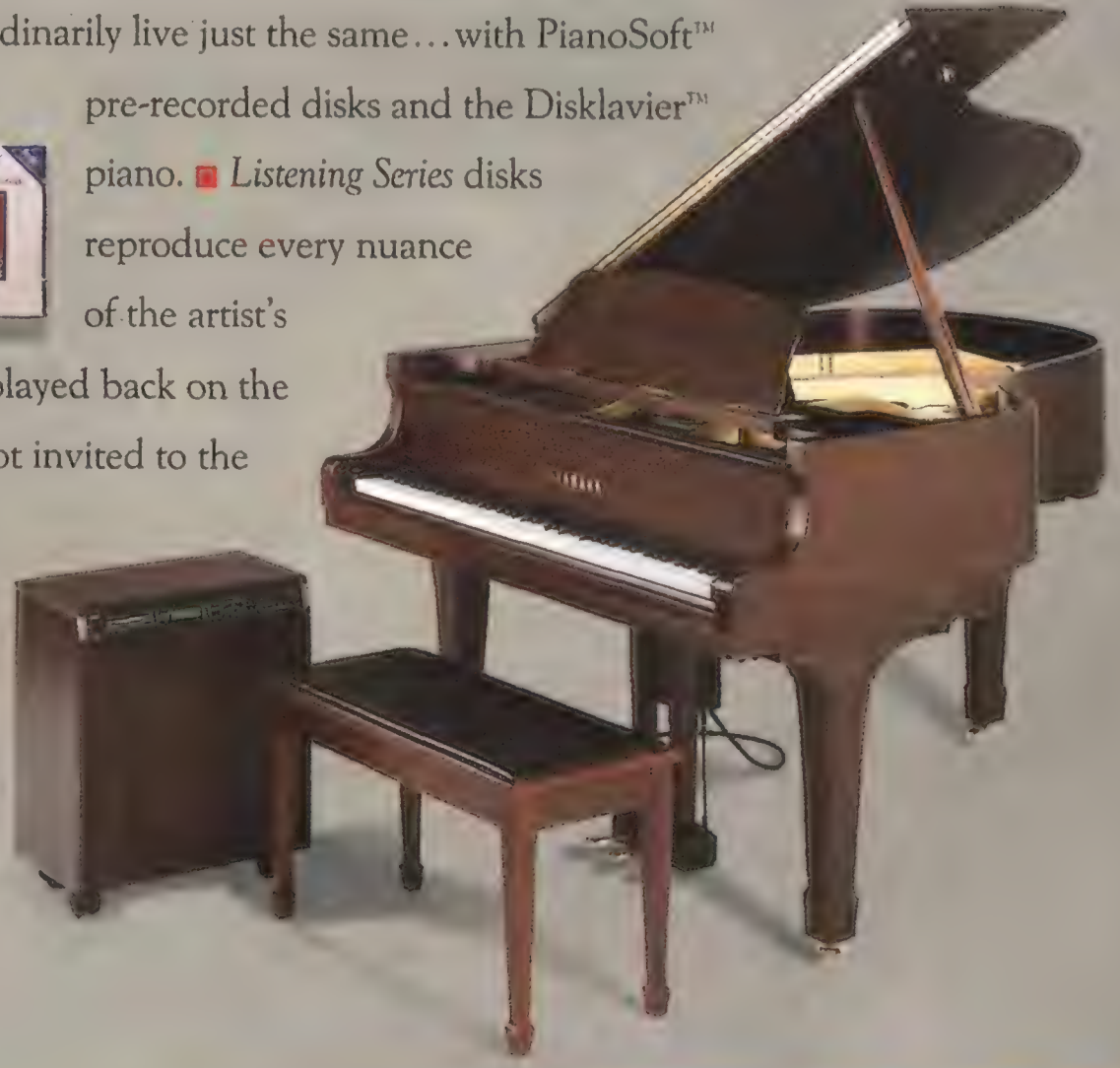
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heard "Welcome to the Smithsonian ...." I took the hint. Mary Grace pointed out that most video users will move on when they notice others lining up for a chance.

If you hate interactive videos, you can learn all about the Smithsonian museums from backlighted panels, grouped in fours along one wall of the Great Hall. They add up to 16, one panel per museum. "That number includes the proposed National Museum of the American Indian," said Mary Grace.

By this time you may be interested in bathrooms. Two have been placed at the west end of the Great Hall, opposite the theaters. Both, I'm told, include diaper-changing facilities.

If you want to rest, benches are placed along the walls, under the windows. Beyond the bathrooms is the Associates' Lounge, made more intimate by the addition of a head-high partition that screens off the corridor leading to the Commons dining hall. Irresistible smells stir your juices as you gather here. But hold it. Associates can't eat in the Commons unless they're Contributing Members. Actually, you can become a Contributing Member for a relatively modest annual donation to the Institution, so the aroma of lunch may convert you—another fair warning. Actually the food is also good across the Mall at the Associates' Court in Natural History.

Many Associates did indeed dig deep into their pockets to help out with the costs of the new Information Center. A plaque at the entrance to the Great Hall lists 521 donors.

Two offices near the Associates' Lounge offer respite to staff people who keep an eye on the lounge and back up the volunteer information specialists who roam the Great Hall to assist visitors.

To help keep the Center from becoming hopelessly jammed, a carefully designed flow of traffic directs you past the information desk and into the delightful little South Tower Room. This space has been restored, with its wall stencils and ceiling paintings, to the way it looked in 1901 when it was called the Smithsonian's Children's Room (*Around the Mall*, January 1986).

Its outer door opens directly onto the Enid A. Haupt Garden. And that's such a nice place to begin your fully briefed, totally knowledgeable tour of the Smithsonian that, like as not, you'll forget Wenatchee for quite a while.

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Phenomena, comment and notes

A book published 40 years ago remains not only a prose jewel but more and more pertinent to our concerns today

In the past I have decorated some of these columns with paragraphs from Aldo Leopold, like a lucky prospector sharing a little gold dust with friends. I tried to do it sparingly, not least of all because it is foolhardy to mix in filet mignon when it's ground chuck that is being served. Only a fool would pick up a bat to demonstrate the greatness of Ted Williams or a bow to explain the genius of Pablo Casals. But now, happily, it is time to ease the rationing and pay full tribute to this forester turned writer. This year marks the 40th anniversary of the publication of his best-known work, *A Sand County Almanac.* A definitive biography and a collection of critical essays have appeared. Moreover, much of the world is beginning to worry about the things he worried about a half-century ago.

His book has sold more than a million copies, but Leopold never fit the image of a best-selling writer. His only book published during his lifetime was a text for a vocational course that was so low in prestige that for years his office was a small room in a basement. The book he is famous for appeared only after his death. He never appeared on a talk show, never signed copies in a bookstore, never had an agent.

In photographs, he is often stern, no-nonsense, almost grim. On the printed page he is a delight. His style is almost as spare as his appearance, yet the words that remain are warm, funny, loving, as well as knowledgeable and insightful. Leopold had vision: he could

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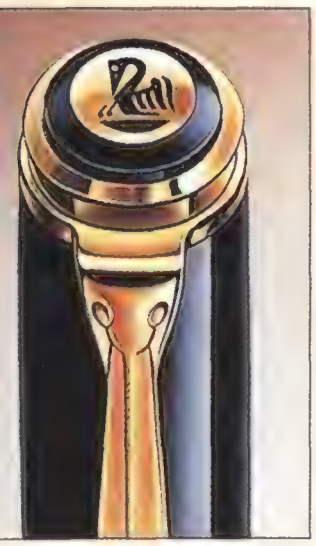

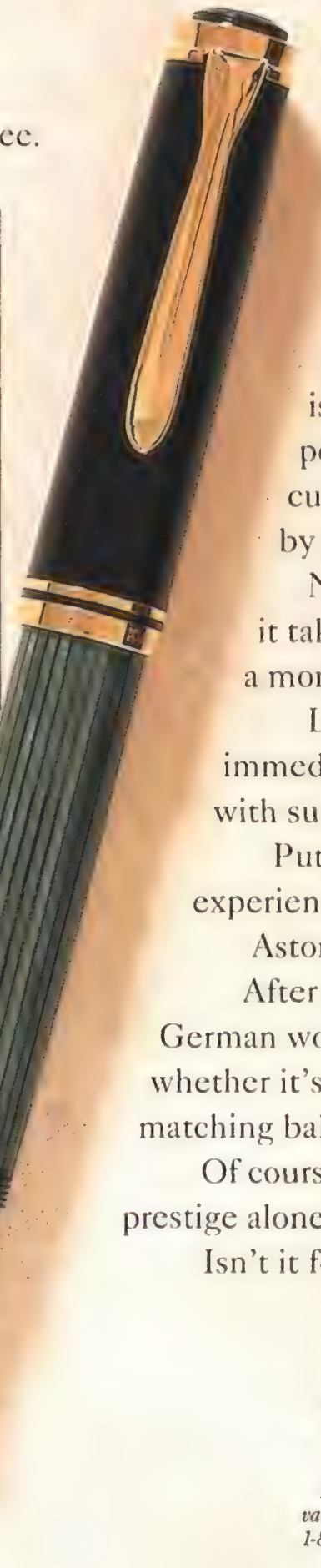

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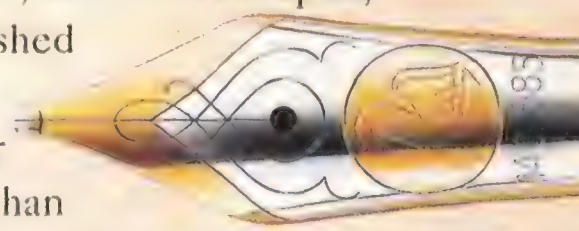

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see the world around him with rare clarity; he could see what had happened to it and what was going to happen. He could sense the health of forests and fields like a doctor who walks down the street and knows which strangers are healthy and which are ailing from what diseases. He could see cause and effect.

Leopold spent his life as a professional observer, first for the U.S. Forest Service in the Southwest, later for the manufacturers of hunters' arms and for conservation agencies in the Midwest. During his last years he taught wildlife management at the University of Wisconsin. At a time when the word was just coming into general use, he was a superb ecologist. In a 1938 talk he despaired of the biological education of his day. He visualized taking a Phi Beta Kappa from his lab and confronting him with the living world outside:

"We are driving down a country road in northern Missouri. Here is a farmstead. Look at the trees in the yard and the soil in the field and tell us whether the original settler carved his farm out of prairie or woods. Did he eat prairie chicken or wild turkey for his Thanksgiving? What plants grew here originally which do not grow here now? Why did they disappear? What did the prairie plants have to do with creating the corn-yielding capacity of this soil? Why does this soil erode now but not then? . . .

"Many students would consider these questions insane, but they are not. Any amateur naturalist with a seeing eye should be able to speculate intelligently on all of them, and have a lot of fun doing it. You will see, too, that modern natural history deals only incidentally with the identity of plants and animals, and only incidentally with their habits and behaviors. It deals principally with their relations to each other, their relation to the soil and water in which they grew, and their relations to the human beings who sing about 'my country' but see little or nothing of its inner workings. This science of relationships is called ecology, but what we call it matters nothing. The question is, does the educated citizen know he is only a cog in an ecological mechanism? That if he will work with that mechanism his mental wealth and his material wealth can expand indefinitely? But that if he refuses to work with it, it will ultimately grind him to dust? If education does not teach us these things, then what is education for?"

For years I had wondered how a forester had become a writer of such chiseled prose. Some of the answers can be found in Curt Meine's biography, *Aldo Leopold: His Life and Work*, published last year by the University of Wisconsin Press. (The press had published *Companion to A Sand County Almanac: Interpretive & Critical Essays* the year before.) Leopold grew up in Burlington, Iowa, roaming the fields and woods along the Mississippi River, alone and with his hunter father. From a very early age he recorded what he saw in notebooks and made his own maps with his own names for landscape features. He spent the last year and a half of high school at Lawrenceville Preparatory School in New Jersey, walking the fields nearly every day, in good weather and bad. At the Yale Forest School, he would take the trolley into the countryside to reach his beloved wild places.

Leopold is most revered today for his extension of human ethics to the living land. But his "almanac" of a year on a ruined farm in the sand counties of Wisconsin, from which the book draws

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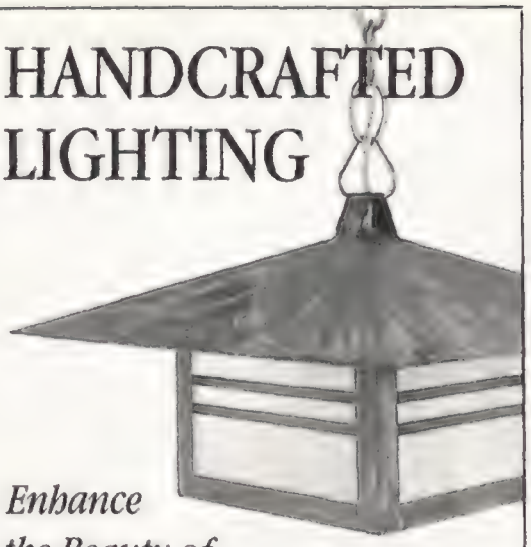

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Leopold caught sizable trout on 1924 trip in Quetico Provincial Park, Ontario.

its name, is just as eye-opening. For this month, November, he chose to celebrate, among other things, the wildlife riches that came from diseased trees on his rundown farm: the downed oaks that kept their leaves long enough to produce sanctuaries for ruffed grouse, the tangled roots of a blown-down maple that sheltered raccoons, diseased heartwood that fed the grubs that fed a pileated woodpecker, hollow oaks that provided nesting space for barred owls and wood ducks, and most treasured of all, the snag that held the nest of a prothonotary warbler: "The flash of his gold-and-blue plumage amid the dank decay of the June woods is in itself proof that dead trees are transmuted into living animals, and vice versa. When you doubt the wisdom of this arrangement, take a look at the prothonotary."

Aldo Leopold did not miss much. Take the current interest in Gaia, the idea of Earth as a living organism (SMITHSONIAN, August 1989). James Lovelock and Lynn Margulis are properly credited with giving it shape and substance. But now read Leopold, writing in 1923:

"Possibly, in our intuitive perceptions, which may be truer than our science and less impeded by words than our philosophies, we realize the indivisibility of the earth—its soil, mountains, rivers, forests, climate, plants, and ani-

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mals, and respect it collectively not only as a useful servant but as a living being, vastly less alive than ourselves in degree, but vastly greater than ourselves in time and space—a being that was old when the morning stars sang together, and when the last of us has been gathered unto his fathers, will still be young."

Last September I was bowled over by a long piece in the *New Yorker*, subsequently published as a book called *The End of Nature*. Its thesis is that human activity has so disrupted the natural world, so affected the atmosphere and thus climate and weather, that everything we have learned—and come to depend on—in the way of patterns and feedback loops and stability is no longer operative. But this thought is not entirely new, either. In his 1933 textbook on game management, Leopold considered the charge that managing an ecosystem, no matter how lightly, to produce more of a certain, favored species was unnatural:

"There are still those who shy at this prospect of a man-made game crop as at something artificial and therefore repugnant. This attitude shows good taste but poor insight. Every head of wild life still alive in this country is already artificialized, in that its existence is conditioned by economic forces. Game management merely proposes that their impact shall not remain wholly fortuitous. The hope of the future lies not in curbing the influence of human occupancy—it is already too late for that—but in creating a better understanding of the extent of that influence and a new ethic for its governance."

Where did Leopold learn to write? There was the inevitable Miss Rogers at Burlington High School. He read widely all his life. But it would seem he learned by doing. The mystery writer John D. MacDonald once said that anyone could be a writer: all they had to do was sit down and write a million words. Leopold easily exceeded that in his letters home while at school—long, detailed descriptions of his forays. He would write all his life, but rarely for the general public; rather, his work appeared in all manner of scientific and professional journals. But he was also writing essays at 4:30 in the morning, in his office in Madison or at the "shack" on his beloved farm. Most of these appeared in relatively obscure publications, but one publisher approached Leopold as early as 1941. When he died in 1948, the collection was almost ready. Friends and family, with his son Luna acting as editor, applied the finishing touches and the book appeared the following year. Sales were respectable, but not until the heightened environmental consciousness of the 1960s did the book begin to sell in large numbers.

No one knows the effects he or she has on other people. A biographer of G. K. Chesterton received a letter from a person present when G. K. debated G. B. Shaw on the merits of Christianity. Shaw appeared to have the better of that debate, but afterward a young woman, a Socialist, declared to the letter writer: "But G. K. was right." She "never looked back," the writer continued, and died the abbess of a Poor Clare community. Few readers of Leopold will have gone so far, but in terms of seeing the world in a different way forever after, of making permanent changes in their system of values, I would guess that an unknown but large number of people have finished *A Sand County Almanac* and never looked back.

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Goddard stands beside his contraption before 1926 flight lasting 2.5 seconds.

Robert Goddard and his rocket were lonely pioneers of Man's thrust into the limitlessness of space

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You are looking at a full-scale replica of Robert H. Goddard's first working rocket. On its pioneering flight it rose 41 feet in the air, landing 184 feet from the frame. The flight took 2.5 seconds and launched the human race, for better or worse, into the space age.

We know rather a lot about that momentous day, March 16, 1926. It was a snappy, crisp afternoon with an inch of snow on the ground and the smell of snow in the air. Goddard and his wife, Esther, and a couple of friends had spent the morning setting up the rocket outside his aunt Effie Ward's farmhouse near Auburn, Massachusetts. They kept going inside to get warm but finally, around 2:30 P.M., they had a last cup of hot malted milk and went back out, rubbing their mittened hands.

Goddard, a 44-year-old physics professor at Clark University in Worcester, Massachusetts, opened a small valve to let oxygen into the rocket-shaped fuel tank, situated below the cylindrical motor and attached to it by tubes. The whole apparatus weighed a little more than ten pounds with fuel. Then Henry Sachs, a machinist, lit a blowtorch that he had tied to a pole, and reached up and touched off the igniter filled with black powder on top of the motor.

The thing flashed and roared. Esther Goddard started her home movie camera. The rocket sat there. And sat there.

And after ten seconds it lazily began to move. Clearing the frame—and accelerating with sudden fury—it zoomed straight up, curved, waned, hit the hard ground still roaring, its nozzle half burned away.

Percy Roope, a fellow physicist at Clark and a helper on that day, said the inventor "was calm, he always was cool and quiet, but you could tell he was really excited. He flushed up a bit. . . ."

Esther Goddard recalled much later, "He didn't say much. But you ask any inventor about his invention when it works for the first time, and there's just nothing like it."

The four of them went back to Aunt Effie's kitchen for coffee. Later they would cannibalize the parts of that original rocket for future efforts. The movie camera missed the historic flight because the film ran for only seven seconds, and it had taken ten seconds to burn off enough fuel to reduce the rocket's weight to nine pounds, for it had only nine pounds of thrust.

But Esther's photograph of her husband standing possessively beside the device is today the classic illustration no space history can be without.

It's hard to read much in his face. He always was a modest person, his friends said, "plain as blueberry pie," who loved Buster Keaton comedies and smoked his cigars down to his finger-

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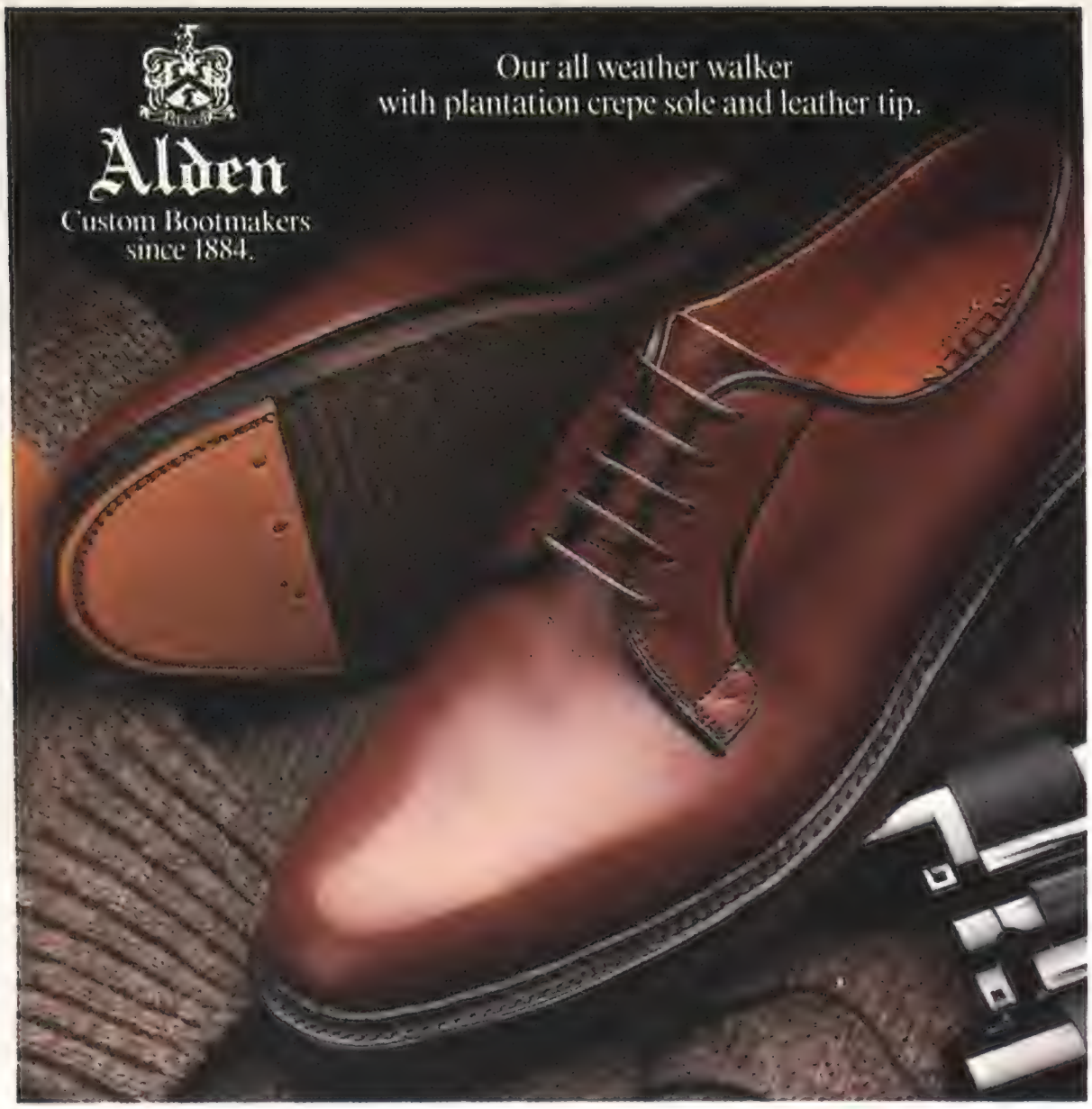

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nails. Yet always, you felt, there was that other Goddard, that solitary, that visionary who could never tell the wonders of his vision.

One day when he was 17—to be precise, it was October 19, 1899, at Worcester—he climbed a homemade ladder into a cherry tree to do some pruning. He stayed up there for hours, rapt in an ecstatic perception of the world from above, from higher than the treetops, higher than the clouds, higher than the sky, a dream of human beings flying through space, voyaging to the moon and to Mars. Was he the first to envision our planet as a lovely blue-and-white ball in a black vacuum?

We will never know. When he came down at last, dizzy with his dream, he could say only, clumsily, "I was a different boy when I descended the tree from which I ascended. Existence at last seemed very purposive." Every year he celebrated the anniversary of his vision.

Robert Goddard was to have disappointments that would send most of us into the insurance business. "God pity a one-dream man," he once wrote. In the closing weeks of World War I, for instance, he demonstrated to the Army a tube through which soldiers could fire rockets at the enemy, a technology similar to that of the bazooka, the basic antitank weapon a whole war later. The Army assured Goddard it would be glad to fund his research, but in less than a week the war ended. When his first major paper, "A Method of Reaching Extreme Altitudes," describing a multistage rocket that could take a payload to the moon, was published in 1919, it drew laughter. From the heights of journalism, the *New York Times* jovially chuckled that Goddard lacked even "the knowledge ladled out daily in high schools."

Forty-nine years later, with Apollo 11 circling the moon for all humankind to see, the *Times* ran a correction. "It is now definitely established that a rocket can function in a vacuum. *The Times* regrets the error."

After World War II, U.S. Army scientists debriefed Wernher von Braun and other Germans who had built the terrible V-2 long-range ballistic missiles at Peenemünde. What had given the Nazis the perseverance to get so far ahead of us on this?

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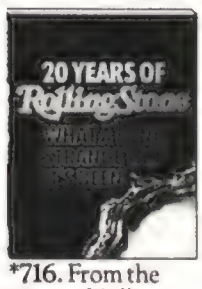

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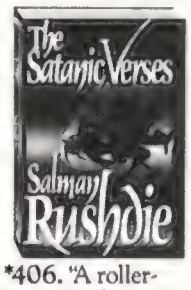

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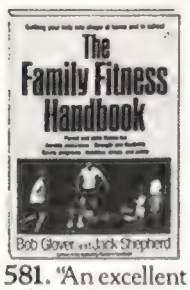

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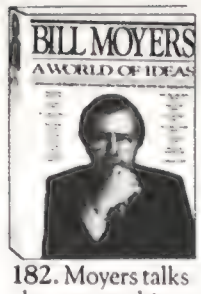

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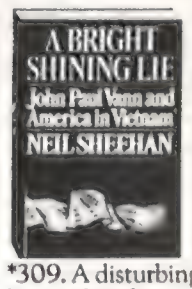

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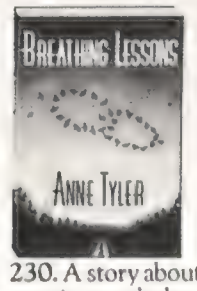

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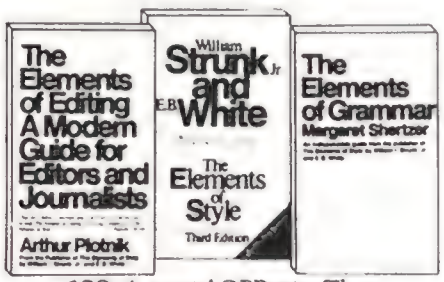

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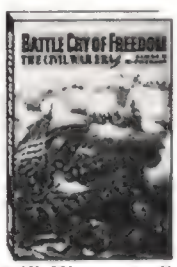

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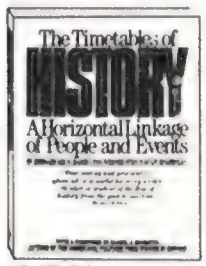

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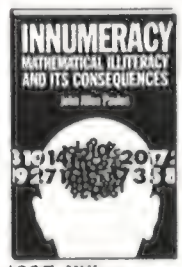

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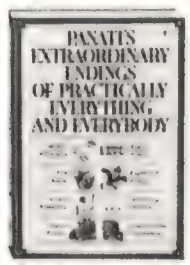

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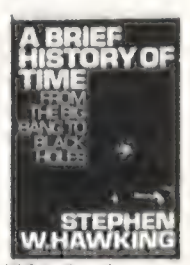

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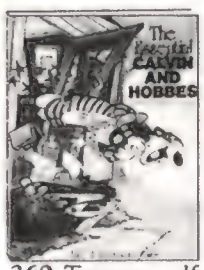

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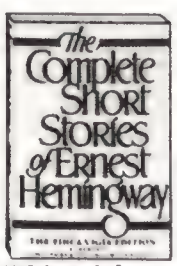

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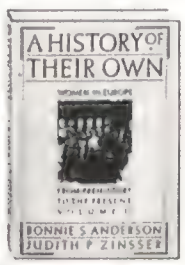

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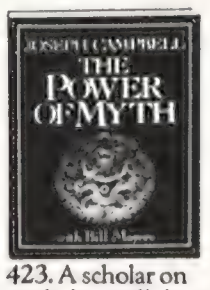

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The reaction: Robert who? The American public had barely heard of the man. The Germans, inspired by Goddard's passion, had solved their own problems. Von Braun would note, however, that "many design solutions in the V-2 rocket were covered by Goddard patents."

It figures. More than half of his 214 wide-ranging patents were granted to him posthumously, based on his notebooks. Scores had to do with every imaginable phase of rocketry, future as well as present: fuel-feeding devices, gyroscopic stabilizers, a jet-driven propeller, an air-breathing resonance chamber and an idea for solar propulsion. They also included an oscillator that was a forerunner of the radio tube. Not until 1960 was money found to compensate Goddard for possible infringement of his rocket patents, dating from 1914, in building the Jupiter, Redstone, Vanguard, Atlas and Thor rocket engines.

Esther Goddard, by then 15 years a widow, was awarded $1 million. She gave half of it to the Daniel and Florence Guggenheim Foundation which, along with the Smithsonian Institution, had funded and encouraged the inventor.

Actually, the Smithsonian was his first backer, giving him $5,000 in 1917 and later helping him attract so many other awards that eventually he became one of the best-funded inventors in the country. Some years ago researchers found several Goddard notebooks dat-

The space-minded inventor shares a tree with his mother around 1900.

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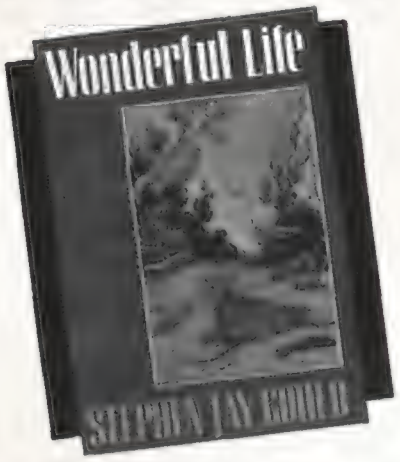

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ing from before World War I that discussed space probes, solar propulsion, reentry heat shields, electron and ion engines, and gyrostabilization. They even included a design for crew's quarters on a multiton rocket.

In those early days, though, Goddard concealed his actual dream of reaching the moon—for fear of being laughed at. At Princeton, where he had a research fellowship, he was officially working on his oscillator. But at night, though he did not dare tell anyone about it, he was working on his theory of rocket propulsion. When—two months before Pearl Harbor—he offered his expertise to the American military, he was put to work on "Jato" takeoff boosters for planes, not exactly what he'd had in mind.

Whatever the rest of the world thought, he kept at his life's work. He had the courage to make a radical change even two weeks after the pioneer flight, putting the fuel tank on top and the engine below it. He built rocket after rocket in steady succession. Every time he began setting up the pipe frame at Effie's farm, small boys would collect in the surrounding woods to watch.

In the National Air and Space Museum you can also see the rocket he flew in May 1926, just two months after the first. This one is the real thing: the oldest liquid-propelled rocket in the world. There are several other Goddard rockets in the museum, notably the 1941 job, 22 feet high, with 985 pounds of thrust.

When his 1929 version, with instruments aboard, crashed in a field, neighbors made such a fuss that he moved his experiments to Camp Devens, Massachusetts, and later to Roswell, New Mexico, a cattle-and-sheep town 3,600 feet above sea level. Here he set up the first rocket-testing center in America. His first successful launch, in 1930, sent a rocket named Nell shooting 2,000 feet skyward at a maximum speed of 500 miles per hour. In 1935 one of his rockets broke the sound barrier. Soon they were shooting two miles high.

All this time, Goddard remained a relatively obscure physics professor. His students adored him. When a lab demonstration was going well, he would whistle to himself. Always the same tune: "It's a Long Way to Tipperary." And the class would cheer.

Forcing himself to become more sociable, he joined the Roswell Rotary Club. He was a man who laughed easily, but you could sense the inner quiet,

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people said, the concentration of a solitary intent on his one dream. He died five days before V-J Day in 1945, too soon to know that the first man in space would be a Russian. It was just as well.

As you look around at all those space vehicles, from the battered Friendship 7 to the exoskeletal Skylab, big as a house, and as you watch the movies of the takeoffs from Canaveral—those tremendous controlled explosions that rattle your bones even in the NASM theater—remember that all this, or a lot of it anyway, is what Robert Goddard must have been seeing in his mind on that cold afternoon at Aunt Effie's farm as his little brainchild shot up to the treetops.

Michael Kernan

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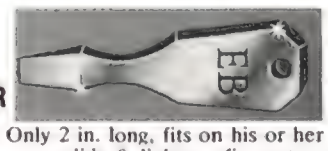

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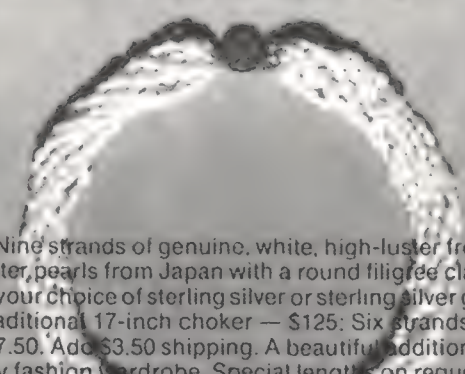

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On the banks of the Rio Juruá in Eirunepé, Ery Monteconrado, once-prosperous owner of a rubber holding, waits for barges carrying supplies. The town is now swollen with refugees from the forest.

Whose hands will shape the future of the Amazon's green mansions?

Rubber tappers were once regarded as saviors of the Brazilian rain forest, but now the seringueiros *are hard put to save themselves*

By Michael Parfit

In the hot, dry days of summer in the rain forest, when the Rio Juruá shrivels and the forest sweats, when the vultures circle over the town of Eirunepé waiting for the fish to die, and smoke blows up from the fires to the south and stains the air with rumors of the murder of Chico Mendes, Ery Monteconrado stands restlessly at the window of the Monteconrado brothers' store and thinks he has been forgotten by the world.

The river is the highway here; there is no other road to Eirunepé. Monteconrado watches it every day. Maybe today it will end his isolation. Surely today his cousin Amazonino, the Governor, will come again to give away chain saws, and bring news that the government is at last going to pay the Monteconrado brothers for their land. Surely today the barge from Manaus will arrive, bringing the supplies of *cachaça* (Brazilian white rum) and flour that will restore prosperity to the Monteconrado family, and let them compete again with the Bald One. Surely today a canoe will come down from the fading village of Mourão, deep in the forest up the Rio Eiru, to tell him that the people of the forest have ceased their exodus and have gone back to their trees, and that the empire of rubber is not finished after all.

"If you turn your back to the light you'll see only your shadow," a Portuguese sign says in Montecon-

Beneath a rainbow's arch, seringueiros have built a few huts and made a small clearing in the forest.

They tread lightly on the land, but they must live in isolation without schools, stores or doctors.

Photographs by Randall Hyman

rado's office. All over his walls and ceilings are plastered the handwritten signs that contain the compiled wisdom of his life, such as "Love isn't to be understood; it is to be lived." The signs are frayed; he hasn't put up a new one for years. He stands among his weather-beaten thoughts at the window, wearing a blue shirt, a gold chain, a crucifix and an expression of anxious goodwill. Surely today the approaching river, whose annual floods have already consumed five blocks of Eirunepé, right up to his door, will change its course and stop gnawing at his foundations. He stands embraced by solitude and plans a retaining wall.

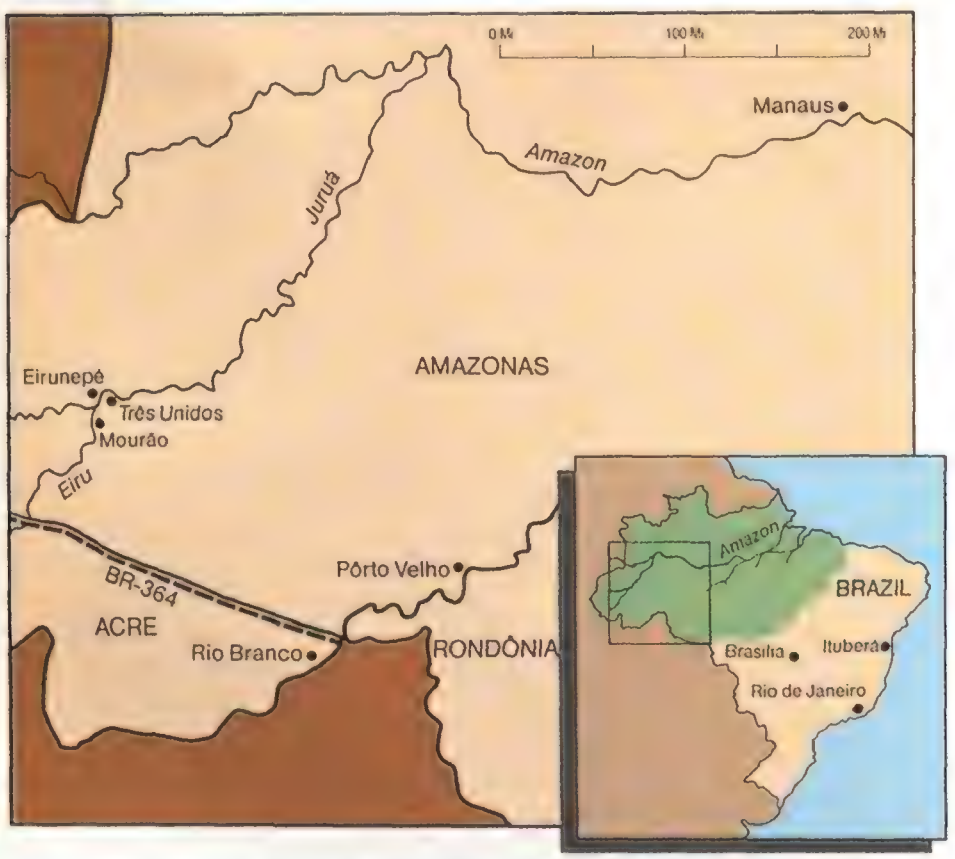
But Monteconrado is not alone. If you pulled the camera back from the window where he stands watching the river, far back to the edges of the great basin of the Amazon, you'd see the silhouettes of millions of people from the world's wealthiest nations standing there, watching him as anxiously as he watches the river.

His solitude is illusion. The vast green landscape of his home is the center of a huge preoccupation. To us out here in the developed world, the forest has suddenly become immeasurably valuable and its residents its custodians. Surely the people of this last great tropical forest on Earth will protect the trees for us, and with them the planet itself—the planet that we, for all our power and wealth, have heedlessly brought to the brink of the flood.

"The Amazon is the magic mountain of ecology," said an American official in Brasília, whom I visited during a recent two-month flight by light aircraft around Brazil. "It all happens there." In the western Amazon, 1,500 miles away, an anthropologist who has worked there for ten years put all this hope in a few words: "It is the people who live from the forest who will save the forest."

These sentiments are widespread. During the past couple of years much of the worldwide concern about the environmental changes that seem to be accumulating around the planet has focused on the Amazon basin. This huge expanse—2.8 million square miles, an area nearly the size of Australia—has been described as the lungs of Earth, as the storehouse of genetic diversity and, because of its magnificent abundance of life, as the hiding place of cures for AIDS and cancer. Not only is it a myth that the forest tames the greenhouse effect as a net consumer of large amounts of carbon dioxide (the amount of CO_2 released by the burning and decomposing of vegetation exceeds what the forest takes up), but forest destruction, particularly by burning, has actually contributed to global warming. When, in the past few years, large-scale clearing and burning of the forest for farms and cattle ranches—encouraged by government incentives—clogged the Amazon's skies with smoke so thick that aircraft were grounded, and scientists suggested that the fires added to the greenhouse, the watchers began to crowd around.

The Amazon has become a vivid symbol of the interdependence of nation upon nation for the survival of life on the planet. And, oddly, out of violence and martyrdom, and perhaps because of a human longing for saviors, some of the poorest, most powerless people on Earth—the men and women who gather latex from trees in the Amazon wilderness, and the Indians who live among them—have been assigned leadership in the task of protecting it.



Author left Rio Branco, flew over BR-364 to reach the remote rain forest town of Eirunepé, where the Rio Eiru and Rio Juruá flow together and seringueiros struggle to survive. Green is Amazon basin in Brazil.

"Truth is like a rose; it has thorns"

In July of this year I stood in Monteconrado's office, chided by his signs—"Whoever recognizes his ignorance begins to be wise," "Truth is like a rose; it has thorns"—and found myself immersed in this strange situation, struggling to understand it.

I had flown slowly down from the United States in my Cessna Cardinal, across thousands of miles of forest. Although long stretches of forest passed below without a sign of roads or fires, there was no escaping the question of the Amazon's development. Near the northernmost tip of Brazil, at Boa Vista, some of the gold miners who are pouring into the region by the thousands, polluting the water with mercury, and killing Indians with disease and bullets, crowded around my plane as I refueled, hinting that it might be worth

"*Chico Vive*" spelled out in Brazil nuts honors Mendes at mass six months after his murder. In first *empate* (protest action) after Mendes' death, 50 rubber tappers burned loggers' huts to stop further cutting and protect livelihood.

my while to sell it on the spot for double its value in gold dust. Escaping their grasp and my temptation, I flew past an area where a huge hydroelectric dam has flooded more than 700 square miles of jungle, poisoned the water with rotting vegetation and destroyed a river's economy downstream. At Pôrto Velho, in the state of Rondônia, whose forest has borne the brunt of the past decade's onslaught of ranchers and settlers, a young man urged me to attend the state's first ecological conference. "People have been saying we have been burning and killing," he said. "This is all not true."

As I flew west from Pôrto Velho I saw long fingers of pale green and brown reaching into the forest, where chain saws, bulldozers and fire have pushed pastureland north into the woods like mange. Then, when I landed at the western frontier city of Rio Branco, in the state of Acre, a stranger at the airport slipped a mimeographed note into my hand. There would be a mass that evening, the note said, to commemorate the six-month anniversary of the murder of Chico Mendes.

That night the Rio Branco cathedral was crowded. On white paper in the aisle two words were spelled out in Brazil nuts: "*Chico Vive.*" It was indeed a celebrated murder. Francisco (Chico) Alves Mendes Filho was a rubber tapper, a *seringueiro*, one of anywhere between 70,000 and 300,000 people—depending on who's estimating—all over the Amazon who harvest latex from wild rubber trees. During the past ten years he had first led the organization of the seringueiros of southern Acre to oppose practices of debt peonage imposed by large landowners. Then, when Brazilian land-development policies, and roads financed in part by international banks, led to widespread cutting and burning of forests that the seringueiros used, he and others developed an effective system of nonviolent protest, called *empates*, in which crowds of seringueiros would suddenly show up where men were clearing the forest and persuade them to stop.

The idea that the Amazon forests already contained a system of economics, and a resident population that was committed to its survival, was so appealing to the environmental community of the developed nations that Mendes was invited to the United States to testify before Congress and international banks. He was establishing a worldwide reputation as both a labor organizer and an environmentalist when, on December 22, 1988, he stepped out of his house and was shot down. Mendes and his seringueiros had peacefully confronted several ranchers and one of them, Darli Alves da Silva,

Author Michael Parfit flew the same Cessna Cardinal to Brazil that he used to crisscross this country for his book Chasing the Glory.

Pickup truck of the Amazon, the motorized dugout canoe is a main means of travel through the forest.

and his two sons have been convicted of the murder; they are appealing the verdict.

"We are remembering a person who gave his body and his gift for us," the priest said of Chico Mendes six months after his death, and the crowd of 500 stood and sang: "It is the time of grace! It is the time of liberation!" The shirt and sandals Mendes had been wearing when he was killed, and the towel that had been draped over his shoulders, were brought to the altar. On a mimeographed handout with the hymns were Mendes' words: "I want to live to defend the Amazon." Through his death Chico Mendes' defense of the forest became famous. All the aggression of developers against the forest, all the fears we have of losing this green abundance, were focused by the death of one man. Chico Mendes had become the martyr of the Amazon.

By the time I reached Rio Branco, nine movie companies had made offers for the rights to Mendes' life story, journalists from leading publications and television networks all over the developed world had made pilgrimages to Acre to interview Mendes' colleagues and survivors.

So to get a clearer view of what is happening in the Amazon I flew northwest, following the infamous highway BR-364 to where it trickled out into a cart track. The road looked like an arrow through the heart of the jungle; Brazil plans to push it through to Peru, opening Pacific ports for Amazon trade. I turned away from it, flew north over unbroken forest for an hour and landed at one of the most isolated towns in the Amazon, Ery Monteconrado's home: Eirunepé, in the state of Amazonas.

Going to the forest people in a jungle town

It was like going behind enemy lines. Rio Branco is a city of the road, a part of the familiar, bustling network of Western commerce, connected to the pulse of Rio de Janeiro and São Paulo. Eirunepé was a jungle town, part of the ancient web of water and woods. Here, in the dusty little clearing of Eirunepé, and in the intact forest that rolls away for hundreds of miles in any direction you look, I would learn whether the people of the forest really had the power to accomplish what we desire.

There was no bread in Eirunepé. People ate turtle, fish, manioc and, when they could afford it, rice and beans. Once I spent the equivalent of my waiter's weekly salary (about $12) and bought a pizza, but I never could buy bread. Ery Monteconrado said it was because the barge from Manaus hadn't come yet. Lino, who Monteconrado's brother thought was a Communist drug dealer, said bakers of Eirunepé had stopped baking because the government let the price

Children of former rubber tappers play in the poor section of Eirunepé. The prospects for work there are limited, but as one administrator says, "No one likes to see their children dying slowly in the forest."

of flour rise but the price of bread had not increased.

Lino, who used only his first name, couldn't post his thoughts on his wall; they were too complex. Maybe that's why the Monteconrados didn't approve of him. Maybe it was that he looked like a hippie, with his frizzy long hair and his delighted eyes, or that he represented radical Catholic theology in his work with Indians in Eirunepé.

Outside Lino's house, where we often talked in the warm evenings, the air was laden with the smell of rubber from the processing plant up the road; it was acrid but nostalgic, like a good childhood dish made of fruit and burned sugar. As we stood in the moody stink of the town's economic base, Lino remarked obliquely about the perspective of flight.

"From the jungle," he said, "we hear a plane and we can't see it; from a plane, you look down and you can't see the people. Neh?"

The people of the jungle hide beneath their magnificent canopy; it is easy, flying over, to imagine there is no one there. But the Amazon is a rich environment for human beings as well as for trees; it has been thoroughly populated for millennia. As many as 4.8 million Indians may have lived there before Europeans brought murderous diseases and conflict in the 17th century; when they thinned out, the seringueiros came. They poured into the Amazon in two waves, first during the great rubber boom of the late 19th and early 20th centuries, and then again in World War II when refugees from Brazil's poverty-stricken northeast became Soldiers of Rubber, marched into the forest for the sake of the Allies' tires and never came out.

Soon after I reached Eirunepé I went looking for the seringueiros up the Rio Eiru in a boat powered by a one-cylinder engine as loud as a machine gun. There I began to learn that the people of the forest are leaving it.

The river, less than 50 yards wide, was as twisted as a snake in a small box. We pushed upstream, turning with it, and the sun swung back and forth overhead as if all our global disturbances had finally made the planet lurch off its track. The forest crowded the banks, as aswirl and alive as the river. The clean trunks of trees climbed to high, solitary crowns, and explosions of vines smothered others. A crocodile snoozed on a sandbank, white butterflies haunting its eyes. Snags wiggled in the current, as if someone were signaling urgently from below. At the outside of each bend was a fresh cliff of red dirt or a tumbled mass of new-fallen trees, while at the inside of the bend the new silt left by the moving river was already growing shrubs. The river was an agent of deforestation; it cut through the woods like a bulldozer, trimming the long-haired landscape and making room for new life.

All the way, at intervals of a mile or more, we passed houses on the banks, tiny shacks on stilts made of palm trees split and flattened, and thatched with leaves. The homesteads were stark: a few banana trees, young manioc plants and scrawny corn, chickens, pigs and old dugout canoes on stilts, filled with earth to grow herbs. Each home was 20 feet above us up the bank, but the high-water marks on the walls were higher than the stilts; for part of each year the people of the

A seringueiro's wife and her grandchildren wait out rain in their flimsy split-palm hut near the Rio Eiru.

forest are inundated by the Amazon's annual floods.

At each home the windows were full of solemn children. We waved; they seldom waved back. They watched our boat come bellowing up the river; they watched us go bellowing away. They were like owls, with their big dark eyes and their heads that turned but did not acknowledge us. Then we reached Mourão and I began to understand the affliction that lay along the river like a fog.

It was the sadness of ending. Mourão was a *seringal*, owned by Ery Monteconrado and his brothers. A seringal is a rubber holding, land claimed by a *seringalista*, who is like a feudal lord: a rubber baron. He allows seringueiros to live and harvest rubber on his land. The seringueiro pays him rent, sells him rubber and buys supplies from him. The system is often abused and seringueiros have been held in debt slavery, arranged so that the rubber sold never pays off the cost of supplies. That was the system that Chico Mendes fought successfully in Acre, but nobody was fighting it here. No one needed to; it was falling apart.

Once the village of Mourão, at the heart of the Monteconrados seringal, had more than a thousand residents. Now 19 families lived there—just over a hundred people. Six years before, there were 12 soccer teams here, provided with uniforms by the Monteconrados. Now the few children left played beside weatherbeaten rows of houses, with bits of bark stuffed in a plastic bag.

Mourão's hotel was falling down. The village still had a discotheque, with a circular floor polished by years of barefoot dancers. That night I heard music and thought I'd find life there at last. But inside, in the curiously blue light of a single candle, only two young girls and two pairs of children shuffled slowly around in clumsy embrace to the music of a cassette recorder. It was the first sign of affection I had seen in the forest, but it was forlorn, like the embrace of survivors in a town decimated by war.

Human signatures in the forest

The forest crowded around Mourão. From the bright heat of morning in the village's clearing it looked impenetrably dark. But inside it was cool and full of shimmering green light. Cicadas whined; birds whistled. I walked there with a young seringueiro named Francisco Sergio Pinheiro, who was 22 and had three children. The trees he visited had been used for a generation or more. Their bark was scarred in even, parallel lines. No one had cut initials, but this human signature in the forest was deep; it was like seeing footsteps worn in the stone stairs of a cathedral, or a methodical record of days cut into prison walls.

With a knife bent like a can opener Sergio sliced a thin, swift gash at a slant in the bark of each tree. The white latex dripped out as fast and as rich as blood, and ran down into a cup.

"Right now I am a seringueiro," Sergio said shyly. "I would like to be something else."

The driver of my boat was with us in the forest. He was a brash man with a loud voice, probably induced by deafness. When I asked Sergio how he got his *estrada*, his trail of trees, the driver answered for him, shouting through the calm: "The *patrão* [boss] gave it to him. When he doesn't want to cut anymore, he gives it back to the patrão. He can have another estrada if he wants it. There are many estradas now without seringueiros. They don't have the people to cut them."

Why?

"The seringueiros left a few years ago," the driver said cryptically. "They couldn't get supplies." But other people were not so reticent. "The life of a seringueiro," a former seringueiro told me once, "is the most suffocating life you can have. He fights and fights and fights and has nothing. His hands are full of smoke."

Cutting rubber has never been good for anyone except the patrãos. Even in the days of the rubber boom seringueiros fought disease, Indians and crocodiles for months at a time and then ended up in debt. It remains a desperate existence. You go out on the estrada long before dawn, your bare feet shuffling among leaves and snakes, your way lighted by a smudge of light from a kerosene headlamp called a *paronga*. All day you cut trees and gather latex while

bugs pierce you and gather blood. Then you come home and must smoke or press the latex; you have made $3. If you work hard you can cut 1,100 pounds of rubber during the dry season and earn about 23 cents a pound. In the wet season, in some parts of the Amazon, you can harvest Brazil nuts for several hundred dollars more, or cut down occasional trees for sawmills.

"A seringueiro has no future," said a former tapper whom I had met selling trinkets on a street corner in Rio Branco. "He only works to make others rich." The hard work is not the only trouble. A seringueiro lives deep in the forest with little social life, no schools and no medical help for miles. "In town there are people to help you," one seringueiro told me. "On the seringal you can only get help from God."

Seringueiros are as meek and as strong as their forest, and almost as quiet. "They know everything about the jungle," Ery Monteconrado's brother Ecy told me once, "but they don't know how to tell you about it." They didn't know how to tell me about their pain, either. On another day on the Rio Juruá I had talked to a woman whose family moved from Acre 16 years before. Both her husband and son were seringueiros.

"It was very bad in Acre," she had said simply. "We thought it would be better here."

Was it?

"It is more or less the same," she had shrugged. "It's just hard to live."

A man who once administered Brazil's rubber programs put it more vividly: "No one," he said, "likes to see their children dying slowly in the forest."

Before getting back in the thunderous boat to leave Mourão, I walked among the houses. From near the disco came the solitary high voice of a child singing while she swung her baby sister in a hammock. "But now you have left me, my love," she sang, over and over. A young fisherman, getting ready to shoot dinner with bow and arrow in a nearby oxbow lake, used a word I would soon hear again: "This is a weird place," he said. "It is *acabado*."

The word does not translate directly into English. Roughly, it means finished, complete, worn out, over.

"We call it the exodus," said Raimundo Chagas da Silva, a representative of an Amazon-wide organization of seringalistas. I was back in Eirunepé, where there was still no bread. The sun blazed behind him through the open door of his house into the dim kitchen; all I could see of him was the flash of a white smile in a long dark face, and the flicker of his long supple fingers. Flies crawled on the lip of his coffee cup. A black-and-white cat limped past outside. Inside, the sun shone along the polished top of a hundred-year-old cabinet made of Eirunepé mahogany.

Chagas was a seringalista. He claimed 10,000 hectares upriver, but now he owned a hotel and a small sawmill and, like the Monteconrado brothers, wanted to sell his land to the government.

"The seringals," he said in a slow, golden voice, "are places of abandonment."

As if he were speaking a hymn, he rolled the reasons out into the warm evening. There was more to the exodus than just a hard life; seringueiros had been putting up with that for a century. But now the price of rubber was too low, the cost of living too high, and

Susan Purvis

Eirunepé's vice mayor, José Alcimar Garcia, does his best to provide assistance and reassurances to refugees like the little girl above, but resources are meager. "We must have agriculture," he says.

the hard life of cutting rubber was not justified by the return. "And so the negative result has arrived," he said. "The people decide: if they must suffer they might as well suffer in the city." The smile flashed, the slow voice rolled. "Now it is acabado. It walks swiftly toward the end."

Brazil, which Chagas called the mother country of rubber, has long tried to support its seringueiros, not just to protect their industry, but to keep them out there in the Amazon occupying the borderlands. But rubber is grown so efficiently in plantations in Southeast Asia that it makes wild rubber uncompetitive. So the government taxes imports to support an artificially high price for its own product. Despite that, the price has lagged behind the country's wild inflation. Also, perhaps because the government has recently put more and more emphasis on other ways of developing the Amazon, support for the seringueiros' way of life has also faded. Gone is a regular radio program that gave them the up-to-date price figures and an inspirational drama called *Machete, Paronga and Courage.* Gone is a system in which the government attempted to provide food at lower prices. Gone are boats that carried doctors and dentists deep into the forest. Gone is an ambitious program designed to give seringueiros minifactories, which enabled them to process their own rubber and keep more of the profit.

Holding a collecting cup in his mouth, a rubber tapper cuts groove to bleed a few ounces of latex from tree.

A new administrator, whom I visited in Brasília, promised that many of those programs will return, and that the price will be pumped back up. In Acre, with the help of outside groups and fierce encouragement from U.S. environmentalists, the organization Chico Mendes led has been able to develop a few schools in the forest and revive some of the minifactories. But there's another fundamental obstacle to the resurrection of rubber in the forest: Brazil's rubber industry is turning to plantations.

Attempts to grow rubber in rows in the Amazon have usually failed because a leaf blight that is impotent among isolated trees runs through crowds of them like fire. But the blight needs humidity and heat, and now the rubber industry is planting its trees in drier, cooler areas of Brazil.

At one point during my flights around the country I spent a day at a Michelin Tire Corporation plantation in Ituberá (p. 60), on the coast between Rio de Janeiro and the mouth of the Amazon. It was winter there and the leaves had fallen; beautiful gray forests of rubber trees covered 5,500 hectares of rolling hills. A million and a half trees stood in rows there, each with its own little plastic cup and its custodial rubber tapper, who wasn't even a seringueiro; he was called a *sangradore*—a bleeder. Michelin employed 850 bleeders and 700 support people to produce about 3,000 tons of rubber a year; in the forest that much rubber would require the work of 6,000 seringueiros. Michelin gave each sangradore about $75 a month and a free home with running water and electricity; there was a 20-bed hospital and a social life that centered on 19 villages. Life was better there than it was in the forest or in Eirunepé.

Forest rubber proves inferior

After seeing all this, I still had one hope for the jungle: surely its rubber had something special about it—an uncommon resilience, a wild toughness—that would always make it in demand. But that, too, was an illusion. Rubber cut in the forest is often contaminated by both debris and time, and comes out dirty and weak compared with bright, golden, plantation rubber.

New rubber plantations are approaching maturity. Last year 43 percent of Brazilian rubber production was from plantations; by 1991 it will rise to 60 percent. In Brasília I asked the nation's administrator of rubber

if, as more plantations begin to produce efficient, clean rubber, there will be less demand for the wild latex.

"It is inevitable," he said.

The stink of rubber in the air of Eirunepé seemed more nostalgic than ever one afternoon when I walked through the streets with the vice mayor. His name was José Alcimar Garcia. "There will soon be bread," he promised. We walked down a long, elevated plank walkway into an area called Vila Cacau, where tiny houses with glassless windows stood on stilts in row after row. These were the new homes of the seringueiros.

Promises to the poor in Eirunepé

Alcimar offered reassurances to all the people we passed. Things would get better. He signed a requisition form so a destitute mother could buy food. "Go to the Bald One," he told her. He showed me the afflicted with a strange pride: an old blind woman who crawled to him across the floor, a mongoloid child, a horribly distended baby. Alcimar promised help. "You will be mayor next time!" the blind woman shouted.

"Five years ago this did not exist," he said, pointing to row after row of shacks. "Five years ago the population of Eirunepé was 8,000. Now we think it is 30,000." All those people had come out of the forest. A man led an ox past us. People wobbled by on bicycles. Little boys ran and grinned. Young girls in short, tight dresses slipped by, so childlike and sultry that they reminded me of what a physician had said earlier: families are so poor here that girls are sold into prostitution at the age of 11. Alcimar shook hands right and left, and squeezed the arms of the women. We stopped and talked to families. "I came from the seringal Foz de Tarauacá," said one man, hoeing a meager garden. "I came from seringal Santa Maria," said a woman. The children in her doorway smiled and waved.

"I have found it better here," said a woman from the seringal Foz de Jurupari. "My husband works for the Bald One. We bought this house for [about $60] and we're working to put in windows."

I asked Alcimar if he sees complete abandonment of the forest. He hesitated. Two women walked past carrying buckets of water on their heads. They smiled. He squeezed their arms. "Yes," he said. But even if prices and hardship wring every last seringueiro out of the woods, the forest will not be empty.

One day I walked into the house where Lino worked, into a room that opened out from a narrow hall like a chamber in a cave. Seven people looked up from work in notebooks on their desks. Red lines were painted high across their cheeks. They were Indians.

"The Indians and the seringueiros do not have the same trajectory, neh?" Lino said cheerfully. The Indians watched him. They were members of the Kanamari tribe, which once had lived at Eirunepé but had moved deeper into the forest 130 years ago, when the Europeans came. The house was called Casa Kanamari. Lino was teaching them Portuguese.

"The seringueiros were dispersed through the forest," Lino continued. "Now they are truly leaving the forest for the cities. The Indians are not dispersed, neh? They are in social groups, and they tend to keep their social space away from the cities."

The nearest Kanamari village was Três Unidos, about 20 air miles—a day's travel by dugout canoe—east of Eirunepé. It was a group of 20 wood-and-split-palm houses built on stilts near a stream at the north end of the airstrip on which I landed. Três Unidos was ramshackle and dirty—recently acquired pigs had made the ground a black bog—but it was full of laughter. It was the opposite of Mourão; it thrived.

The Indians at Três Unidos did not cut rubber. They had little commerce with the outside world.

Coagulated latex "biscuits" collected in the forest are filled with impurities that decrease their value.

Tapper's house is on stilts to protect it during frequent flooding, when travel is only by canoe.

They lived on fish, game, wild fruit and small plantations of manioc, sweet potatoes and bananas. The men cleared new fields every couple of years and the women farmed them. This communal life is so effective that one state agency is trying to persuade seringueiros to get together in semicommunal groups and practice small-scale agriculture. "Like the Indians," a state field worker had said.

But people were trying to change the Indians, too. An international missionary group called New Tribes had built the airstrip, written down the language, translated parts of the Bible and provided medical care. The organization that Lino worked for, a Catholic missionary group, taught Portuguese to the Kanamari and took individuals like a young chief to meetings with other tribes to make them aware of the conflicts of the jungle, and to teach them how to claim their own part of the forest. The two missionary groups distrusted each other but cared enough about the Indians not to make open war.

Perhaps as a result, the young chief looked more preoccupied with life than others of his cheerful tribe: he had been converted by both sets of missionaries, and now gave evangelical religious services by the light of a paronga in the small wooden school building, then talked about learning Portuguese while preserving his culture. "We want to dance our own dances," he said. But others want to dance with them, because if rubber can't save the forest, maybe the Indians can.

"At the time that a species like rubber is rolling over the edge and is no longer valuable in an extractive context," says Thomas Lovejoy, the Smithsonian's Assistant Secretary for External Affairs, who has been conducting research in the Amazon for 23 years (SMITHSONIAN, April 1988), "there should be other resources that come on."

"Researchers," writes Philip Fearnside, a noted Amazon scientist, "are racing to find ways to make saving the forest economically advantageous." This includes study of Indians' use of medicinal plants, in the hope of finding new cures (SMITHSONIAN, February 1989), and other ways they use the forest.

One of the researchers is William Balée, who is studying three Indian tribes near Belém. I talked to him during my later flights around Brazil. He had found, among other things, a powerful black dye, but was just as interested in the way Indians moved through the forest over the centuries, using it fully but changing it gently, like a breeze or a river, and perhaps contributing to its diversity.

Balée was uncomfortable with turning Indian ways of life into commerce. "I could not recommend the encouragement of export from groups whose economies are completely unintegrated," he said. But what bothered him more was the demand (which covers our expectations of Indians and seringueiros alike) that the forest must pay its way in our world. "I don't think it needs to be justified by the fact that it can produce," he said. "Its continued existence is justification enough for its continued existence." That belief does not keep Balée and others from continuing their search. "Using ethical and moral arguments should not preclude using practical approaches," Tom Lovejoy says.

At Três Unidos I found one use that would make millions in America. It was a plant about ten feet high, with leaves like fingers. If you gave some of this plant to the person you loved, said a Kanamari named Da'um, the love would be returned.

A walk through the forest

Unfortunately, it turned out that the tree was more of a tradition than a drug, so was useless at home. But the forest led me on, as if it were a woman and had given me the tree. I walked through it with Da'um and his nephew, who was 8. Da'um strode swiftly among the trees, a shotgun over his shoulder, his broad feet treading silently on soft, wet ground. He left tracks like a bear's. The boy, confident and aware, ran after him, then came back down the trail to wait for me when I lagged behind. Birds whistled invisibly in the trees. A family of tawny monkeys leaped through the canopy. The boy watched, listened and never said a word. He waited for me by a log, then scampered ahead. He left tracks like a cub's.

"The life Indians lead in the jungle is just like an animal life," the seringalista who claimed Três Unidos

BRITTANY HAIFA LAHAINA WATERFORD BALI NICE SYDNEY TANGIER JUNEAU LENINGRAD FORT-DE-FRANCE SANTAREM CAPRI

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COPENHAGEN DUBROVNIK TOKYO GEIRANGER HELSINKI MANAUS HONG KONG BEIJING HONOLULU BERGEN VIGO GDANSK ST. CRUZ MOOREA PALMA DE MALLORCA PLAYA DEL CARMEN

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Kanamari Indian student writes instructor's name in Eirunepé school run by Catholic missionaries. Effort to teach Indians Portuguese is based on a belief it will help them protect rights and economic interests as development encroaches on their part of the rain forest.

had told me. He meant it as criticism. "It would be best if they became more integrated in society so they could contribute more."

But the forest is a sanctuary of not just biological diversity but human diversity as well. The Kanamari are neither poor nor rich; they simply live. What cures for the rest of us hide in that secret? If you turned the Kanamari to commerce it would vanish as swiftly as smoke. The boy's essence was freedom. Where would you put that boy in Vila Cacau, and how would you calculate the loss? To me that sounded more violent than burning the trees. Indians may, however, contribute to the forest's survival without being consumed by commerce. As Lovejoy points out, "Learning how the forest can have economic uses is not synonymous with turning Indians themselves into capitalists."

And the Kanamari need pieces of our culture just as much as we may need bits of theirs. One day a baby fell out of a stilted house and broke his leg. The people came around: Could I fly him to the hospital? After delivering the child and his mother to Eirunepé I went to see Lino.

He was in the backyard of Casa Kanamari, washing clothes in a pan. At first we talked about one of the major achievements of the battle Chico Mendes fought: the general acceptance of the idea of extractive reserves, which are like parks with people in them. They are areas set aside in the forest for people like seringueiros to live in so they can harvest the jungle's renewable crop without fear of expulsion by fire. Twelve extractive reserves are in place or planned, including 9,700 hectares of Monteconrado land at Mourão. One reserve covers more than 2 million hectares.

The proposed reserves sounded ambitious, but when the president of the agency in charge of developing them described them to me during another one of my hops from place to place in Brazil, they looked like a smokescreen. "Tell me," he said after the interview, "will your article help our negotiations with the World Bank?" Or were the reserves, like many other efforts to preserve pieces of the world, just a rearguard action used to ease fears and pave the way for destruction elsewhere—small victories in a general retreat?

Lino was wary of the reserves for another reason. He was worried that seringueiros and Indians would be lumped together in them. "That will annihilate the Indians," he said.

I repeated to him the words of hope I had brought with me to Eirunepé weeks before. They seemed like one of Monteconrado's wall thoughts to me now—battered and out of date. I said them anyway: "The people who live from the forest will save the forest."

Lino grinned cheerfully. "Saving the forest is not really just a matter of saving ethnic groups, neh?" he said. "It will be a matter of raising the consciousness of the world. If we don't change our relationship with the environment, we won't be able to save anything—the forest or anything else. We'll end up destroying ourselves and the viability of life." He grinned. "Neh?"

Then I went to a party and met the Bald One.

"Hey, you big fat turtle!" someone shouted through the clatter of bottles and laughter. At the end of a long table a huge man looked up. He pretended rage. He slapped the table. The bottles jumped. He rolled his vast eyes and massaged his left breast with huge fingers. He wore only bathing trunks. His enormous body

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Eirunepé commercial baron Manuel (the Bald One) Carvalho (on right) throws a party at his ranch.

Vaquiero lassos steer on Carvalho ranch, where land still shows ruins of forest cleared ten years before.

dripped. His naked scalp shone. He poured a cup of cachaça, spilled half of it on the table, drank it, dipped a piece of cashew fruit in salt, took a bite and threw the rest out onto the lawn. His voice was a deep gargle.

"I defend the forest!" he shouted. "I defend it! I only cut it when my cattle need grass."

His name was Manuel Gomes Carvalho, but people called him Manuel "Careca" (the Bald One). The party was at the Bald One's *fazenda*, five miles from Eirunepé. He'd hired the Eirunepé bus and a couple of dump trucks to haul half the population of town out the bumpy red road. On the lawn *quadrilha* dancers entertained the crowd. Behind the open buildings a row of young girls in tight dresses waited for another dump truck. More bottles of cachaça and Brahma beer came out of the cooler. There was bread on the table.

The Bald One had another drink. Rubber was the past in Eirunepé. He was the future.

The Bald One had the biggest ranch in the area, 2,300 head of cattle and a group of stores in Eirunepé that overflowed with merchandise. His barge had come in. He had come to Eirunepé 25 years before to export jaguar furs. When that was outlawed he turned to goods and cattle. Everything about him was audacious, from the expanse of his belly to the way his pastures pushed back the trees. From the air the ranch looked like a piece of Texas, with stock ponds and corrals.

On the ground his operation had the vigor of Texas, too. I had watched his *vaquiero* wear out two horses and one shirt roping 50 head of steer for a buyer. I'd heard his foreman boast about the fecundity of his ranch hands. Pointing out an 18-year-old wife with 1-year-old twins, he said "Here we don't lose any time. All this work, and all these children, too."

Ranchers will destroy forest until stopped

It is not surprising that ranchers continue to destroy forest wherever they can in spite of evidence that many Amazon soils don't support grass for long. Brazil's ranchers carry the moral scythe of manifest destiny. Once that energy belonged to the Soldiers of Rubber and their patrãos. Now the patrãos live in dimly lit rooms among their thoughts of the past and wait for barges that don't come. The momentum is in cattle. In Brazil, where land-protection regulations and enforcement officers often fall off the truck between Brasília and the forest, momentum is more important than law. Recent studies have shown that rain forest is far more valuable intact than burned, but that doesn't matter to momentum. In the United States in 1875 it would also have been more logical economically to have kept the cows and the alfalfa in Connecticut, and ranched bison on the plains.

There was something familiar about the Bald One:

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Kanamari Indians, like this man from village of Três Unidos, know the uses and values of forest plants.

his confidence, his arrogance, his determination, his exuberance, his awareness of profit. In the clean, crisp, efficient office in which I found him a few days later, surrounded by filing cabinets and typewriters, where there was not a single piece of philosophy on the walls, he had turned into a businessman. The veneer of reasonableness was drawn across him the way a modest gray shirt was drawn across his belly. "I have 128,000 hectares," he said. "If I clear 2,000 or 8,000, it makes no difference." I recognized his priorities. He reminded me of home. Of all the people I had met there in the forest, he was the most American.

This was not encouraging. The last time I visited Monteconrado at his precarious window, I noticed a sign on the ceiling that didn't fit the dogged optimism of the rest. "Whoever increases his knowledge," it said, "increases his sadness."

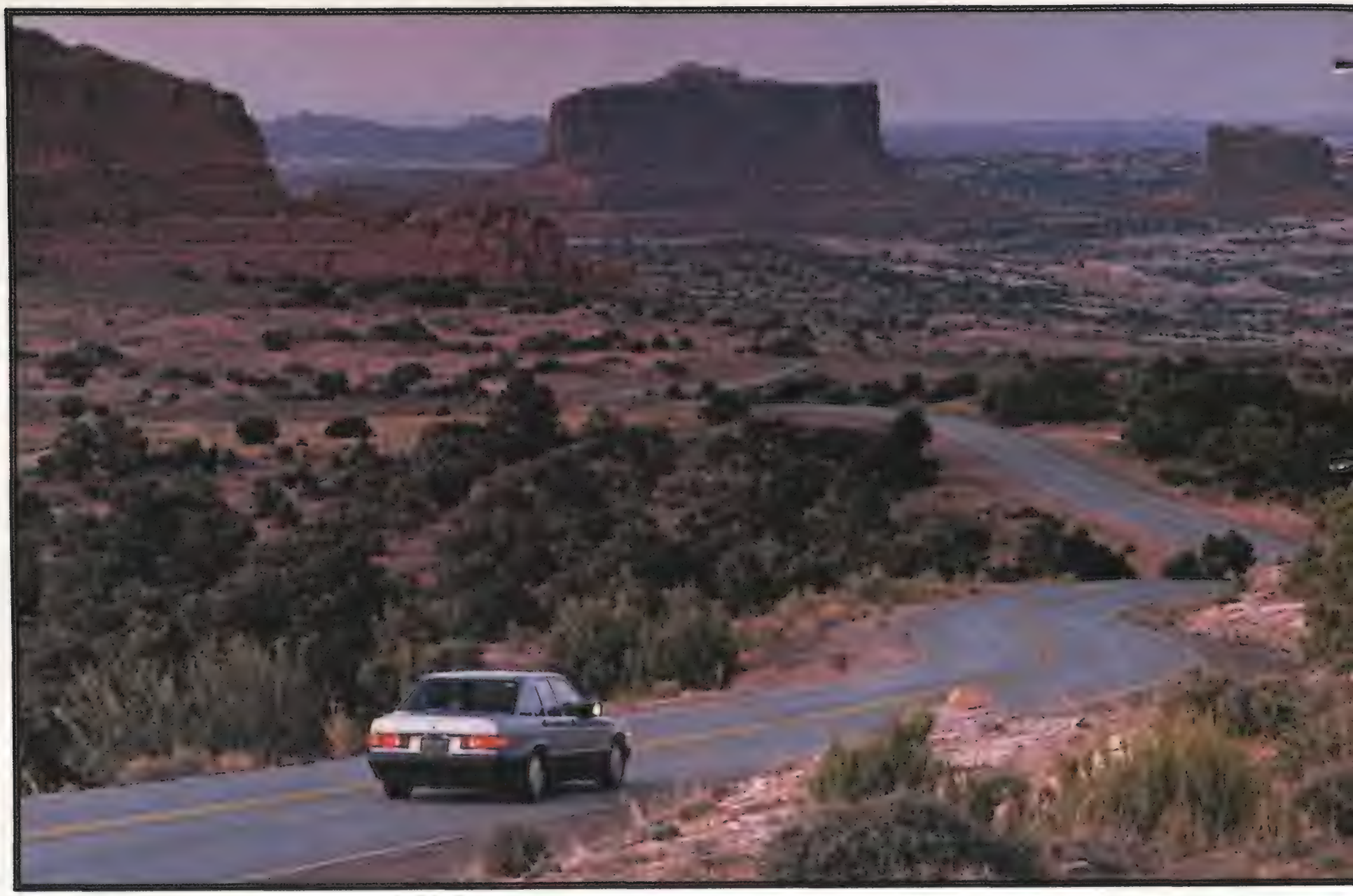
Maybe that's the way I should have felt, leaving the forest with my new knowledge: our heroes the seringueiros aren't going to save the Amazon—they need help just to save themselves. The Indians can't set the forest's value with commerce—they'd disappear. And if we look honestly in the mirror we see the Bald One.

But there was a *friagem* in Três Unidos, a cold wind from the south. It felt as if the planet had changed its sweaty mood. It was refreshing, exciting, strong. There was reason for hope. The international banks have been reexamining their policies. Brazil has suspended some of the incentives that encouraged clearing of land for ranches. And this year there is a pause in the burning of the Amazon. The satellite count of fires is far lower than in the past. The smoke that closed airports last year is thinner. It is as if Brazil is waiting. For what?

"What sacrifices are Americans making in their daily lives to save the Amazon?" asked an environmentalist in Brasília. To Americans the fate of the planet is tied to the Amazon; to Brazilians the fate of the Amazon is tied to smokestacks in the North—the United States alone produces 20 percent of the world's carbon dioxide increase. Maybe Brazil is waiting to see if the powerful nations of the world will change the momentum and make the choice: whether the whole planet, extractive reserve that it is, is worth defending for its own sake or only until the cattle need the grass.

I left Eirunepé. The cool breath of the friagem lifted the plane swiftly, and the grandeur and beauty of the Amazon stretched to an infinite horizon. It is no longer whole, but for the moment it's still there, like the rest of the planet Earth.

Sawmill worker stands atop logs awaiting shipment overseas, where demand drives Amazon development.



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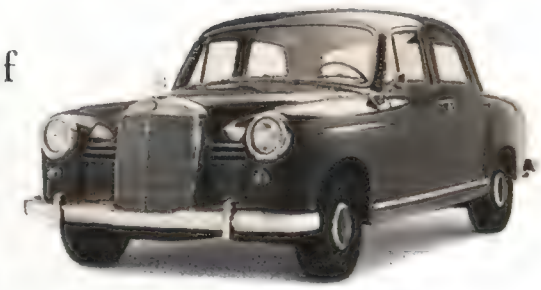

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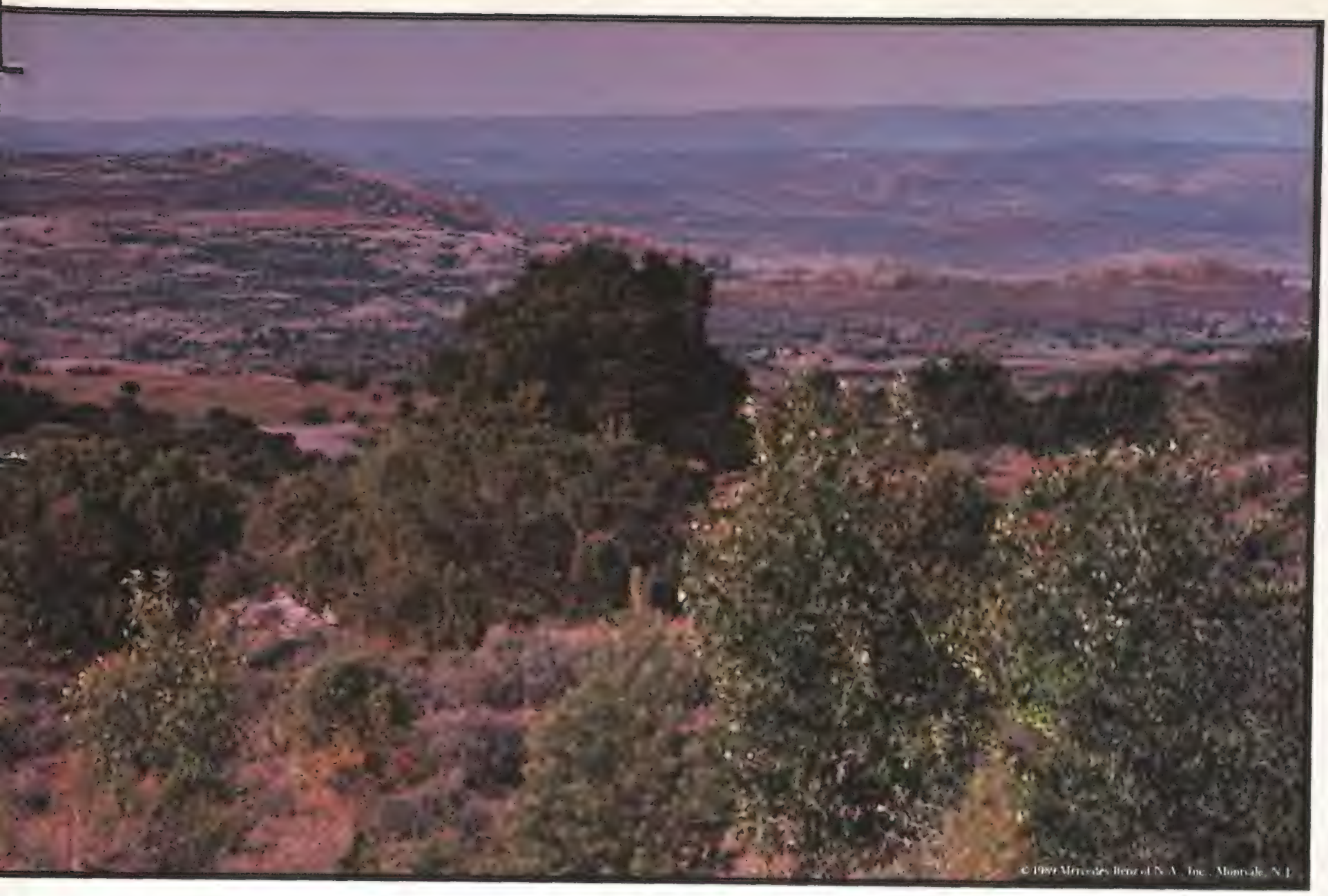

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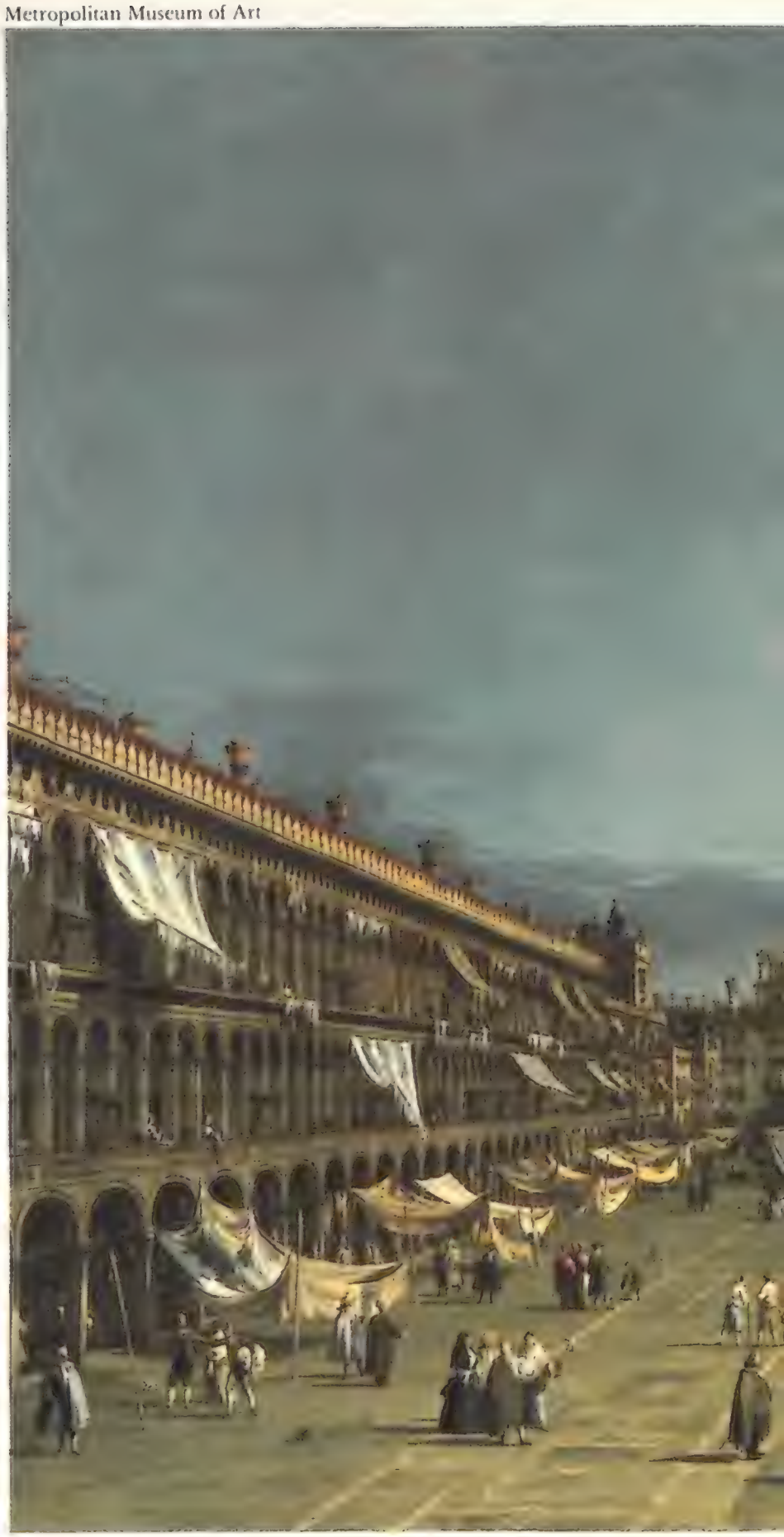
By Dan Hofstadter

The far-reaching eye of Venice's Antonio Canaletto

In the 18th century, the English taste for the vistas of Italy's 'great scanner' fostered not only souvenir views but works of deep expression

Metropolitan Museum of Art



Canaletto's classic *Piazza S. Marco: looking East along the Central Line* measures only 27 by 44 inches.

You can go to Venice for any number of reasons—for your honeymoon, for Palladio's churches, for the Biennale, or (heaven help you) for a rock concert—but one thing you wouldn't go there for is Canaletto. Canaletto was a Venetian and the finest painter of Venetian views, but for a long time only one of his pictures was on public display in that city. Now two more have gone up on the walls, and some have appeared in other Italian towns, but by and large Italy is not the country for Canaletto—England is.

Almost from the start, Canaletto has been an English taste, and if you want to see his work today you still have to travel to great English houses like Goodwood and Badminton and Alnwick and Woburn Abbey, whose dining room is all but wallpapered in Canalettos. If you were on a scholarly errand you might be allowed into the Royal Collection, in Windsor Castle, which has 50 paintings, and if, after all that, you craved a gulp of democratic air you could always go to the National Gallery and admire whichever of its 12 Canalettos happened to be hanging at the moment. Back to back, these cityscapes almost out-window today's London skyline, and not all represent the artist at his best. One point they consistently make, however, in their royal or ducal or public settings, is that Canaletto as an artistic influence belongs as much to England as to Venice, if not more.

The English have long loved miniatures, and there is much of the miniaturist in Canaletto. His Venice springs into focus as in a watchmaker's loupe. The long stretches of pedimented frontage, the looming facades of guildhalls and palaces—these are almost always offset by small, cameolike details. It is a world of distractions. We may glance at a peep show of barges and bargemen, framed in the arch of a hump-backed bridge; or at a glitter of rooftop tiles that wonderfully suggests petit-point embroidery; or at the webbed rigging of some distant fleet, strung out like a cat's cradle against the horizon. Yet despite all the bustle and buoyancy, despite the housemaids at their windows

Painted c. 1730, it captures the "vast open-air salon and theater" that was the center of life in Venice.

and the gondoliers plying the canals, a certain gravity prevails. We feel that the plumb line and the spirit level have dominion here, that "stone rebuts the sea," as modern English writer Adrian Stokes said of the city itself. In his work a sense of compulsion, of a mind pinned down in perspective grids, sometimes assails the viewer. For all that, Canaletto's recurrent playfulness, and his undisputed mastery of architectural rhythm, have kept him a perennial favorite with the English—and with ourselves.

Scholars have helped us to see how deeply 18th-century London needed Venice for her exemplary art and architecture, and for her sense of ideal beauty. But Venice, too, had her needs. In forfeiting her claims as a sea power, in redesigning herself as a passive "subject" —for painting, for writing, for self-improving visits— Venice required someone to behold her. And it was London that came to behold. The lagoon and the canals, the Giudecca and the Bacino played together like a vast piece of trompe l'oeil, with Venice doing the

deceiving and London, in the shape of bewigged or hoopskirted British tourists, being the eye. "Here are inundations of them," wrote Mary Wortley Montagu of the tourists—Lady Mary was an English writer who lived off and on in the city. "Their whole business abroad," she explained in a letter to the Countess of Pomfret in 1740, was "to buy new clothes, in which they shine in some obscure coffee-house, where they are sure of meeting only one another. . . ." Canaletto's role in this social scene, as a maker of upscale souvenirs, was virtually created by the English. His studio could not have grown or prospered without them; and he would eventually be constrained to seek their patronage in their own country.

Artist as pointer, smiler, friend of the sun

In time the English attachment to Canaletto grew curiously perturbed. He came to be seen by some critics, John Ruskin among them, as insincere and pedantic, and people today still occasionally speak of his canvases as "topography by the yard." One of the chief impediments to the appreciation of Canaletto is that neither the English nor we can see Venice through any other eyes than the tourist's. Venice, that city of scrims and false fronts, has none but picturesque connotations. "The tourist Venice," Mary McCarthy has written in a famous essay, "*is* Venice . . . a folding picture-post-card of itself." So Canaletto, whatever else he may be for us, is first and foremost a *guide*. He is the pointer, the smiler, the friend of the sun. Undeniably, he charms us; but we do not trust him very far.

Giovanni Antonio Canal, later called Canaletto, was born in Venice in 1697. His father was a theatrical painter who designed scenery and made maquettes. As a youth Canaletto picked up the techniques of architectural rendering and learned to paint costumed figures, but he soon renounced the life of the theater. He had the wit to see that his trompe l'oeil skills could be conjoined with a kind of painting recently naturalized in Italy, the Dutch-style townscape. There had always been townscape in Italian art, but the new type of view painting was more empirical, more naturalistic in its judgments of proportion and tone, than anything in the local traditions. To master this kind of seeing, Canaletto had to train his eye to act a bit like a lens; but with his scenographer's ability to conjure up churches and bridges and boats in his head, he was also free to reimagine his city in all sorts of fanciful projections. Some of his early paintings, like the Dresden museum's vista of the Grand Canal from near the Palazzo Corner Spinelli, fuse an almost photographic tonal delicacy with an irrational, dreamlike perspective. The horizontal compass of this panorama is easily more than twice that of a pair of human eyes, as if

Museum of Fine Arts, Houston

Grand Canal: looking Southwest from the Rialto Bridge to the Palazzo Foscari dates from about 1730.

Canaletto had levitated over the canal and registered a vast expanse of topography from at least two different lookouts. We picture a sort of "Super Antonio" zooming over the rooftops. In fact, what he'd hit upon here was a form of precinematic tracking similar to the "authorial omniscience" of the early modern novelists; for his whole life, he would never stop telling his audience how far and wide he could see. He was the great scanner, the human telescope. He recorded the goodwife in the distant arcade almost as clearly as he did the bales and cordage at his feet. Yet, at the same time, he was able to see the city as a form of sensuous bewilderment, a splendid puzzle to the eye.

One of the chief aims of the Canaletto exhibition that will be on view from November 2 through January 21, 1990, at the Metropolitan Museum of Art in New York, is to acquaint us with the early period. No

Dan Hofstadter writes frequently on arts and letters. His most recent contributions to these pages were on Benjamin West and Victor Hugo.

It is one of few paintings for which Smith's agency can be documented. Gondoliers are in regatta costume.

Canaletto show has hitherto been mounted in the United States, and only the most persevering of art lovers could possibly manage to visit the far-flung places where the early paintings are housed. These canvases are larger and more loosely brushed than the Canalettos most of us are likely to have seen. They show a shabby, workaday Venice, with torn-up pavements and washing hung out to dry. The paint is buttered on in an almost sculptural impasto, and the little figures—the boatswains and Turks and tricorned grandees—are juggled into life with a few deft touches of earth tones and perhaps a speck of red or blue. The exhibition's organizers, J. G. Links and Katharine Baetjer, evidently want to remind us that Canaletto (like Watteau and Hogarth) could produce bewitchingly lifelike vignettes of everyday life; in her catalog essay, Viola Pemberton-Pigott, senior restorer to the Queen's Pictures, casts considerable light on the artist's figural technique. There is also a hint of theater in these paintings; the tiny supernumeraries, each embodying some social type that we cannot always place yet feel to be authentic, pursue their stage business with a brisk concision of gesture.

Eighteenth-century Venice has often been regarded as a republic in decay. But geopolitical decline does not forcibly entail commercial or cultural sterility, and actually, commerce and the arts flourished there. The Venetians, however, were not especially interested in views of their own city—they saw it daily out the window—so Canaletto had to cater to foreigners. Some of his early pictures went to Lucca and others to Vienna, but as time went on a lot turned up on the walls of a house near the Rialto Bridge. This palazzo had been bought and refurbished, in the English taste, by a middle-aged merchant named Joseph Smith, who loved books and art and conversation, and who was visited, at one time or another, by Horace Walpole, Sir Joshua Reynolds, James Wyatt and Robert Adam.

The enterprising "Merchant of Venice"

We know much more about Joseph Smith than we do about Canaletto. Smith wasn't a creative type himself—he acted as an agent for Canaletto and also collected his work—but it was he who put the painter in touch with some of his most important patrons. Smith was a master networker. Born about 1675, educated at Westminster School, he had settled in the Venetian Republic in the early 1700s and had become involved in the importation of meat and fish. He owned an excellent library, and his little palazzo was a social center for English people on the grand tour. He collected not only Canaletto but also Rosalba Carriera and the Riccis, and he was clearly accounted a remarkable man. In 1744 he was appointed British Consul in Venice. Yet people seemed not to care for him. Horace Walpole called him the "Merchant of Venice," and Mary Wortley Montagu complained of his "self-congratulatory" manner of assisting his compatriots. If you were English and wanted a Canaletto (or, presumably, any number of other things) you could scarcely have done without Smith. In 1762, he was to sell scores of Canalettos—paintings, drawings and etchings—along with the rest of his collection of art, books, gems and coins to King George III for £20,000.

There is a certain ironic rightness in our knowing about Canaletto largely through Smith: it stems from the fact that Smith fostered Canaletto as a purveyor of images to the English taste while simultaneously encouraging the English taste for Canaletto. Much of our appreciation of Canaletto is really also an appreciation of Smith as intermediary. In an oft-quoted letter, Smith wrote to a Staffordshire client that Canaletto was "so much follow'd and all are so ready to pay him his own price for his work (and which he values himself as much as anybody) that he would be thought in

Goodwood House

Detail from *Whitehall and the Privy Garden* (opposite) reveals the depth of the artist's vision of urban life.

[promptness] to have much obliged me, nor is it the first time I have been glad to submit to a painter's impertinence to serve myself and my friends. . . ." Canaletto the spoiled, Canaletto the overpriced—that is the character to which this document seems to attest.

In fact, these few lines constitute one of the most extensive indications we have of the sort of man Canaletto may have been. J. G. Links, who has succeeded other scholars as the chief detective in the great Canaletto mystery, suggests that the "exasperation" of these words "gives them a ring of truth." This is perhaps overgenerous, for surely Smith, with his native mercantile wiliness, had the knack of faking that ring. Smith's words make it clear that he often found painters an exasperating lot. He may well have invented or overstressed Canaletto's "impertinence" as an explanation for the high prices he himself was asking; so the picture of a vain or high-handed Canaletto does not hold up. The enigma of Smith's relation to Canaletto is in a way the enigma of any agent's relation to one he represents. Some aims they shared, others they did not.

Was he "whimsical, surly, and clownish"?

We cannot assume that Canaletto was any more tight-fisted than his customers. View painting was a minor genre, and it is conceivable that he confronted—or felt he was confronting—a certain lack of respect in purchasers who failed to appreciate the poetic depth of his work. In the end, only one contemporary description of the artist resists reduction to commercial motive: that of a Swedish art lover who called him "whimsical, surly, and clownish"—something, perhaps, of a buffoon or mock simpleton. All we know of his private life is that he had no wife or recorded children, and that his style of living was spare.

In the early 1740s, the demand for Canalettos began to dry up. By then Smith's clientele was largely glutted, and the War of the Austrian Succession had strangled the flow of English tourists. It says a great deal for Smith that at this point he commissioned a whole series of paintings from Canaletto that he knew he could not sell. Though he had always acquired certain works for himself, this was nothing less than a massive rescue operation. It suggests that despite conceivable differences over money, a profound fascination with the role of benefactor underlay Smith's sponsorship of Canaletto. His position may well have been gratifying, but financially he proved unable to keep Canaletto afloat past a certain point. Canaletto resolved to visit the land that had always shown the greatest fondness for his work, and in May 1746 he appeared in London.

To us today, this sudden reversal of roles is delicious—like something out of fiction or drama. The tour guide was now the greenhorn; the foreign affection could

Whitehall and the Privy Garden from Richmond House was one of two views created by Canaletto in 1746 for the Second Duke of Richmond, a patron. The works were likely the first he produced in London.

now be scrutinized in the hard light of home. It is at this point that the English love affair with Canaletto begins to seem decidedly lukewarm; we don't know exactly why, but he made little money in his ten or so years in England and was twice obliged to place advertisements in the press. Perhaps people's sentiments about Venice were an essential ingredient in their enjoyment of his work; bereft of this subject, his precise, lapidary manner may have seemed dismayingly chilly. Was he even the real Canaletto, or only a carefully trained impostor? One contemporary chronicler, George Vertue, wasn't sure. "On the whole of him something is obscure or strange," he wrote in the spring of 1749. "He does not produce works so well done as those of Venice. . . . Especially his figures . . . are apparently much inferior to those done abroad. . . . His water and skies at no time excellent or with natural freedom. . . ." Perhaps, thought Vertue, "he is not the veritable Canneletti of Venice. . . ." As it happened, Vertue could not at this period distinguish between a real and an imitation Canaletto, but the very terms he uses—"not the veritable Canneletti," "at no time excellent or with natural freedom"—introduce the chief critical problem that Canaletto's work would face from then on. Most of his admirers have indeed felt that there are, in a sense, two painters in Canaletto: the inspired creator of a gold-and-crystal world, and his rule-bound, plodding clone. Sometimes these two Canalettos seem to be at work together in the same picture; sometimes one dominates altogether. In England, however, away from Smith, the more natural and free Canaletto was often able to assert himself. There

Overleaf: The day-to-day business of Venice's center of commerce is depicted in *Campo di Rialto*, c. 1758.

Staatliche Museen Preussischer Kulturbesitz, Gemäldegalerie Berlin

National Gallery of Art

Detail of capriccio executed in 1754 fancifully combines English landscape with Italianate elements.

is no finer vision of early Georgian England than that which he left us.

One of Canaletto's most engaging patrons was Charles Lennox, the Second Duke of Richmond, who was born four years after the artist. He inherited Goodwood House, near Chichester in West Sussex, which he embellished in various ways and in whose arboretum he installed a lion, a tiger, bears, eagles and ostriches. At 18 he had been wedded to the daughter of the Earl of Cadogan in payment of a gambling debt, and directly after the ceremony had been sent abroad with a tutor for three years on the grand tour. Back in England, he spied a lovely woman at the theater one night; when he asked who she might be, he discovered that she was his wife. They settled down to a happy life together.

Among his acquisitions from abroad the duke counted a fine pair of Canalettos on copperplate. Almost as soon as the painter had arrived in London, the duke's former tutor suggested that Canaletto be commissioned to "draw a view of the river" from the dining room of Richmond House, the ducal residence in London. The outcome was a pair of large, squarish paintings called *The Thames and the City of London from Richmond House* and *Whitehall and the Privy Garden from Richmond House*. Considered together, these two pictures, which still hang in the hall of Goodwood House, register a north-to-northeast sweep of mid-18th-century London, seen from about where Big Ben is today. The pair of panoramas represents a stunning departure, an attempt to convey an encyclopedic field of equally weighted visual information.

Slicing into the core of urban space

Canaletto's sojourn in London proved that his muse was not simply Venice, but city life itself. Though we cannot and need not dissociate Canaletto from the Venetian picturesque, we must also come to terms with him as a painter of urban space. In an extraordinary essay for the Metropolitan's catalog, Michael Levey vivifies many of the artist's spatial concerns, among them the fondness for beckoning distances. "Always," he writes, "Canaletto appears to promise: beyond what is visible lie further rooftops, further doorways half wrapped in shadow, and further windows, each with its glazing bars. Only rarely does he totally close a composition." In the processing of such masses of detail, Canaletto faces a formidable mapping problem. He has to project onto a flat surface what is really a sort of crystalline growth, an accretion of cubic dwellings. With no choice but to stake out a vantage point within the city, he must slice into its core, so that some things fall under his gaze and some swim out of his peripheral vision or lurk behind his back. This slicing somewhat resembles the act of sawing into a block of marble or a length of timber, for like such materials every city has its grain. Behind the stone shield of the harbor front, behind the filigree of the piazza arcade, the streets bend away or twist back on themselves, always in some characteristic pattern. Sometimes they are devious, shadowed, self-effacing; sometimes they are forthright or boisterous; invariably they hint at more courtyards, lanes, windows, lives—more secret convolutions of the grain. Seen head-on, in elevation, the whole structure closes and tightens—we observe this in some of Canaletto's water-level scenes—but surveyed from a higher perch, the labyrinth opens halfway, as in *Whitehall and the Privy Garden*. Clearly Canaletto was particularly exhilarated by the disclosures and unfurlings of these aerial prospects.

As a designer, Canaletto enlisted several composi-

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tional types—the oblique glance along the quay, for instance, and the frontal impression of the row of facades—but one of his great favorites is the view down the Grand Canal, with its curved enfilade of buildings staring across at one another. This disposition is reminiscent of the classic Renaissance theater set. There's an intimation of open-endedness here, of our being able to turn around and look up the canal in the opposite direction. Indeed, what's so striking about a lot of Canaletto's Venetian paintings is his feeling for entry and issue, for arteries, for smooth passage through the urban scene. This sensation of itinerary is so great in the Venetian pictures of Canaletto's middle period that when we see a group of them—in the Woburn dining room, for example—we almost feel we're in motion.

Yet there's something monotonous, presentational, downright ordinary, about a lot of Canaletto's vistas of the Grand Canal. When he has to do rows of palaces in elevation his skills as an architectural renderer go on parade, and we tire of his shifts and devices: the unchanging midday illumination, the 45-degree angle of the cast shadows, the "base tones" varied with a few warm or cool notes, the rows of pillars or corbels put on with the help of drafting instruments. Canaletto, we begin to feel, is a man with a toolbox: he wants to *build* a painting, step by step, the way you'd build a house. Like a contractor, he has a certain range of materials—directional strokes, dots, incisions, twists of the brush—that make up a working vocabulary. The trouble is that this vocabulary is somewhat limited, and can't entertain certain facts of nature: it can't create natural-looking water, for instance, so that Canaletto has to try to convert his expanses of water into panels of mirror—a builder's material. The more virtuosity Canaletto acquires as a renderer, the less we enjoy his performance, and the reason is obvious: precisely reproduced urban topography cannot create an expressive pictorial space, for it has no emotional dimension. Yet Canaletto wanted that dimension—he wanted it for all he was worth—which is why a lot of the traditional criticism of his work, with its narrow interest in the depiction of Venice, entirely misses the point. His triumph lay in finding the means to represent urban space as affective or metaphoric in itself.

Museum of Fine Arts, Boston

Detail from *Bacino di S. Marco: looking East*, focuses in on a three-masted lateen-rigged vessel. Painted in late 1730s, work suggests the vitality of Venice's maritime enterprises.

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Those means were primarily compositional. Some of Canaletto's greatest successes occurred when his vision cut across the urban grain, when he climbed to some window and surveyed the city on the bias, examining things from a surprising and personal angle. The plainspoken incidents of *"The Stonemason's Yard"* (right) have been much remarked: the girl spinning thread on her balcony, the urinating child, the stonecutters at their labor, the chimney pots that rhyme impishly with the spire of the church across the canal. The terra-cotta warmth of the houses seems to stand for the warmth that envelops the whole tableau. This is a Venice that scarcely looks like Venice, so far are we from the feeling of processional. The canal does not appear to be a watercourse at all: it could be a pond. To the right, the near and far buildings are knit together in a jumble so confusing, so astonishingly proto-Cubist, that we abandon all hope of sorting it out, and merely bask in the beauty of its architectural intervals. At the left, in a few square inches, Canaletto offers an emblem and summation of his whole way of seeing. From one of the nearest surfaces in the foreground, a shuttered window with a balcony before it, his attention suddenly slips half a mile to the rear, to the farthest thing in the picture: a pair of white buildings bathed in the morning sun. The near and the far are conjoined. No distance, we realize, can stop this man's eye from grasping its object.

Canaletto's later *Whitehall and the Privy Garden* (p. 83) lacks some of the earthy charm of his "stonecutting" scene (though a lilliputian in blue may be seen unashamedly relieving himself against a wall in the foreground). Executed almost certainly from life, however, it rises to a pure geometric classicism, largely by integrating shapes found in the vertical plane of the buildings with others found in the horizontal plane of the gardens. Here again Canaletto claims authorial omniscience—he seems to have natural bifocal sight—but at the same time he delights in the mazelike confusion of chimneys and rooftops, and gains a new sensitivity to atmosphere as well. In the end, we cannot tell whether Canaletto's toolbox is building this city or whether the city is re-creating his toolbox, so perfectly does the idea of construction match the thing constructed. Watching his vision net this shoal of details in its ocean of summery light, we begin to suspect that his association with Joseph Smith probably suited his ultimate purposes. Smith's medium was money, his own was paint; but their curious partnership had lengthened and widened the greatest reach in the story of art.

National Gallery, London

"The Stonemason's Yard", from about 1730, is noted for its daring composition and mastery of handling.

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When you were a little kid, nothing was more thrilling than Halloween. You'd run around like a banshee trying on your Dracula fangs, ghoul mask, or Frankenstein elevator shoes. Than, off you'd go frightfully happy clutching your trick-or-treat bag.

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By Sue Hubbell

Be it ever so glitzy, there's no place like the new truck stop

It offers customers all the comforts of home, and then some—from showers and stores to food, entertainment and old-time religion

Late in September of 1988 I was driving east on the interstate through Illinois in my three-quarter-ton pickup with the extra-heavy rear end, which allows me to haul 5,000 pounds of honey at a time from my bee farm in Missouri to the fancy little stores on the East Coast where I sell it. I needed a cup of coffee but there seemed to be too much happening at the first truck stop I exited for, so I drove on to the next one. I asked a truck driver what had been the trouble back there. He, CB-informed, had the answer. "You know that feller running for President—George Bush? Well, he decided to have a bite to eat. Thought it wouldn't hurt to do some campaigning neither." It turned out Bush had brought along a few friends—Illinois Governor James Thompson and the usual entourage of Secret Service men, together with country singers Loretta Lynn, Crystal Gayle and Peggy Sue. Bush and Thompson bellied up to the counter, ordered taco salad and chili. The singers sang. And Bush left a $50 tip.

Truck stops may have been franchised into bright showplaces of the wonderful ways to make plastic look like something else, but they still retain a genuine appeal to those people around a Presidential candidate who plan appearances, and so I wasn't surprised to learn that George Bush was campaigning at one. The

Huge rigs crowd into a brightly lit parking area while drivers repair to Truckers' Inn near Jessup, Maryland.

Photographs by Kay Chernush

Drivers phone dispatchers at Amoco All American Auto/Truck Plaza near the Pennsylvania Turnpike.

Trucks heading west pull off I-40 near Gallup, New Mexico, and rumble into popular Giant Travel Center.

1989 edition of the *National Truck Stop Directory* ("The Trucker's Friend") has more than 2,700 listings. Over the past 15 years of taking honey to market, I've hung out at many of those places. Recently there have been a lot of changes in truck stops, so this past spring I spent a month traveling across the country to document some of them. Here are a few pictures from my slide show:

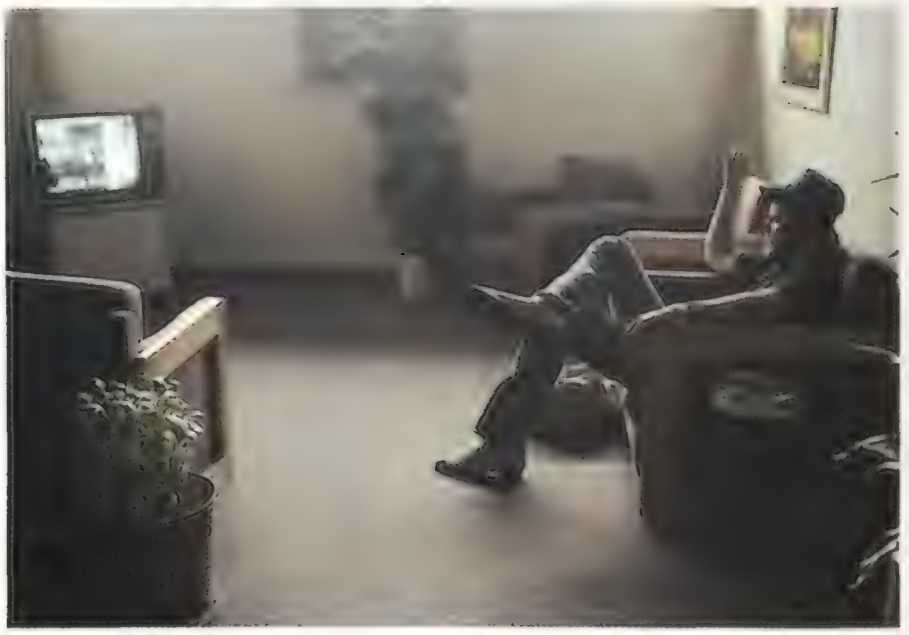
Click. I have just bathed in the shower room and now I am sitting at a mauve booth in the dining area. Enlarged photographs of 18-wheelers, the big tractor-trailer rigs, screen off the general public from the drivers-only section where I am. I have a subliminal understanding that things here are not really as they seem. The quarry tile on the floor is actually made of plastic. The lamps have imitation-glass shades. Each booth is decorated with silk flowers in a plastic basket that is supposed to look like it's straw. The toe-tapping background music is almost, but not quite, country. Everything is inoffensive, clean, vanilla. The waitresses look uncommonly wholesome in their neat uniforms. I've had a fine lunch from the salad bar and my dishes have been cleared away while I am using the in-booth telephone. I am in what the folks at the National Association of Truck Stop Operators call a "third-generation" truck stop.

Click. I'm in a second-generation truck stop. It is a bit claustrophobic. The walls are covered with dark wood-grain paneling. I'm sitting at an orange-plastic table. The air is blue with smoke. Someone puts a quarter in the juke box and a voice wails, "I told her I'd miss her as she walked out the door. . . ." The menu runs to open-faced hot roast beef sandwiches and chicken-fried steak. Pies are reflected and multiplied in a revolving mirror-backed display case in the center of the room. The cream pies have spectacular loft, and I know from experience that if I order one the white stuff on top will taste like a combination of marshmallow fluff and the insulation that builders blow between the walls of houses. There is a bank of telephones near the cash register, and truckers, log books in hand, are using them to call their dispatchers. There is a travel store beyond the cash register that sells the things truckers need.

Click. I am in a truck stop that has a gravel parking lot just big enough for a couple of tractor-trailer rigs. Inside, the air is layered with blue smoke, undisturbed by a ceiling fan that seems to have given up in despair. The waitress, in a pink sweater, has circles under her eyes. A cook presides over a deep-fat fryer and grill. In the ladies room there is a Love Drops machine. For two quarters I am invited to buy a package of Love Drops: "Now for those Erotic Body Areas. Each sensuous Tasty Drop Stimulates, Arouses, Adds a Tingle

Sue Hubbell divides her time between Washington, D.C. and Mountain View, Missouri. She wrote about loons in the March 1989 issue of SMITHSONIAN.

With its large complex of stores and other facilities, Giant is one of the better-known stops in the country.



Trucker Michael Scoles, who is from Oklahoma City, takes a cigarette break in the Giant's TV lounge.

of Pure Pleasure. Mouthwatering Flavors. Hot Fudge. Piña Colada. Wild Strawberry. Coconut Cream." Outside, beyond the diesel and gasoline pumps, there is a pay telephone shielded from weather by a hood. No one is using it. First-generation truck stop. But wait, there's more.

Click. Here is a 1940s movie, *They Drive by Night,* which I rented for my VCR. Humphrey Bogart is in it but not as a star; he merely supports George Raft, Ida Lupino and Ann Sheridan. Bogart and Raft are a pair of truckers tired beyond belief. Raft stops in at Barney's Roadside Restaurant, where all the truckers go for coffee, and banters with Sheridan, the waitress:

"Gimme a cup of coffee."

"Anything else?"

"Yeah, what else you got that ain't poisonous?"

"I don't know. I never eat here."

The trucks Bogart and Raft drove were small by current standards and didn't need the space or services that are required today. Forrest Baker, president of a trucking consultancy and a historian of the industry, says that the words "auto/truck stop" were used by Richfield Oil when it built its West Coast chain in the 1950s. Pure Oil, the Southern predecessor of Union 76, now Unocal, shares the credit for starting what became the modern truck stop by building 24-hour-a-day facilities without locks, so they had to be staffed around the clock every day of the year. Unocal has become the largest chain in the country. Baker tells the story of Orrin Jarrell, who opened what is now the Texaco Virginia Travel Plaza at Exit 40 off I-95 back in the 1950s. Jarrell didn't have enough money or business to hire a night staff so he slept on the floor of the truck stop with his feet against the door. When a customer came, the push on the door would awaken him. Modern trucks and the Interstate System have transformed this folksy way of serving truckers into a much slicker, bigger business: a $27-billion-a-year industry serving 800,000 intercity trucks.

The first place I visited was the Mountain Gate Plaza just off Route 15 near Thurmont, Maryland. It sprawls along both sides of the frontage road with its truck parking lots, gift stores, service garage, bakery, deli and restaurant. Inside the FAMILY RESTAURANT (writ large in brilliant orange letters on the plastic mansard roof) the decor runs to tan and brown. The waitresses and busboys smile without cease. In the gift shop there are American flags, and pictures of Jesus on religious plaques and plates. There are stacks of religious pamphlets and tapes scattered throughout. The menu says "God Bless You."

I asked the waitress if the truck stop is connected with a church. She lowered her eyes, smiled even more and said, "Oh, no. It's a Christian truck stop but we're nondenominational."

If the Mountain Gate is exultant in its fundamentalism, it is only a bit more so than many other truck stops I visited. There are very few that do not have a pile of

Missouri driver Junior Lizenbee goes over schedule by phone from his booth in Giant's upscale restaurant.

Wheels Alive ("Reaching the Asphalt Jungles of the Nations"), a newspaper published by the Association of Christian Truckers, or *Highway News and Good News,* published by Transport for Christ International. That first night I stayed at a truck stop outside Carlisle, Pennsylvania, where Chaplain Jack was available twice a week for counseling. I saw a number of chapels at truck stops, some stationary, others mobile.

That stop, the Amoco All American Auto/Truck Plaza, Exit 17W of I-81 or Exit 16 of I-76 near Carlisle, covers about 50 acres, according to the woman at the cash register there. One industry authority estimates that it can cost upwards of $100,000 per acre to provide paved, lighted parking and that 15 to 30 trucks can park on each acre. That requires a high return on space for a truck stop to stay profitable.

Twenty years ago, a truck stop could stay in business if it pumped 35,000 to 40,000 gallons of fuel a month. Today profit margins are lower and 250,000 gallons must be pumped just to get by. A few of the bigger stops now pump more than 1.5 million gallons a month, trying to capture their share of the 10 billion gallons of fuel truckers buy from truck stops each year. This is what has helped push truck stops into expanding their services to attract more business.

In addition to being a large, high-volume operation, the Amoco All American at Carlisle is a notable place in certain zoological circles. It's the only truck stop designated as an official roost by the American Crow Society, a semi-serious association of people who love crows. At 5:30 P.M. on the day I stopped there, both truckers and crows were coming in. The big rigs were beginning to fill the parking lot and the birds were settling into the trees at the edge of it. The sky was soon black with crows wheeling in from all points. They jabbered as they settled into place, occasionally boiling up from one tree, resettling into another. The truckers were doing approximately the same thing. The crows ignored the truckers and the truckers returned the disregard. I was interested in both.

Inside, in the restaurant where I had dinner after the crows were tucked in for the night, the tables and booths were packed. Although there was a salad bar, the menu ran to traditional (heavy) trucker's food. It included a long list of "vegetables"—french-fried zucchini, french-fried onion rings, french-fried cauliflower. A study I read about recently, conducted by an industrial medicine group, reported that more than 80 percent of the drivers surveyed had gained weight since they started trucking.

At a nearby booth a trucker with a build like the Laughing Buddha addressed his mashed potatoes and gravy with an air of quiet happiness. His belly nestled in a bright-red T-shirt. He had long hair and a beard. His companion driver, a woman, was tearing into her food, too, but pausing now and again, with a dreamy look in her eyes, to croon "Boop . . . boop . . . a . . . boop" to the country music beat, which could be heard over the clatter of silverware, dishes and talk. I eavesdropped shamelessly on the conversation of a pair of truckers at the booth in front of me. The one with a handlebar mustache and a Tennessee accent was complaining to the one whose back was to me about troopers hassling truckers at the western state line of Maryland, where the speed limit is 55. "Two marked cars and one plain brown wrapper. Hell, they was

A road-weary customer at Amoco stop near Carlisle, Pennsylvania, checks out towel and soap for a shower.

arrestin' guys. Goddamn handcuffs," he added with what I assume was the exaggeration of a good story. The conversation rolled on to radar detectors, lawyers. Said Tennessee, "I got two goddamn lawyers, one at home and one in upstate New York, and I'm *still* not makin' any money."

After dinner I wandered into the travel store to buy postcards and then went searching for the mailbox up on the second floor where the showers, video game room and TV room are. It was hot and stuffy there, packed with men passing the time. I found the mailbox next to the UPS drop. Outside in the cool air the crows were quiet. Many of the truckers were also asleep in the beds in the backs of their cabs.

In preparation for my trip I had sent $15 to Unocal. For that I received a professional driver's card, a keen belt buckle and a key chain with lions' heads on them, a patch for my jacket, a decal and a lifetime subscription to *Road King Magazine*, a quarterly full of news, gossip and jokes. I also received in my membership packet a stack of "truckerbucks" worth $15. Many of the bucks were for things like partial payment on a lube job but some of them could be spent at any Unocal travel store. They were burning a hole in my pocket so the next day I stopped at the New Stanton West Unocal Auto/Truck Plaza at Exit 23, near Smithton on the Pennsylvania Turnpike. I gassed up and went into the travel store where I bought an atlas showing truck routes and other useful information, a pair of ventilated sunglasses and a trucker's cap. All my life I've wanted a cap that said "Mack" on it. It is a gorgeous, royal-blue cap with a Mack truck bulldog set off by scrolls of gold leaves. I put it on and as I walked back through the parking lot the driver of a big Navistar waved at me.

R. G. Ferris gets a $5 shine on his silver-tipped boots at a stand outside large video game room at Giant.

Norma Ferguson pampers a client in barbershop at the Tucson Truck Terminal (aka Triple T) in Arizona.

At the West Virginia state line I popped in the cruise control at 65 and rolled west. From then on, I lived out of truck stops. I found truck stops that had good food, bad food; truck stops that had shoeshine stands; truck stops with laundromats, movie rentals, in-booth coin-op TV, lottery tickets, barbershops and beauty parlors. The Unocal Indianapolis West 70 Truck Plaza, Exit 59 of I-70, offers among other things haircut ($7), beard trim ($5), cut and perm ($30), ear piercing ($5). I found a truck stop with a knife-and-scissor-sharpening stand and one with a pawnshop. (What, you may wonder, do truckers pawn? An antique sequinned-and-beaded purse cost $45 there, a cloisonné napkin ring was $24, a "germany" screwdriver $9.) I found a truck stop with a legitimate massage clinic and one that had a wake-up service for truckers sleeping in their rigs. I found horoscope machines, sex-potential machines and biorhythm machines (the latter always showed me as "moribund"). I heard about still other truck stops with resident dentists and chiropractors.

And truckers. I saw truckers everywhere. Most of them, I noticed, come labeled. Their caps say "BAMA Trucks," "Littlefield Lightning," "My Name is Henry." Their jackets say "Ken Burch Trucking," "Bullpen," "Roll on Alabama." Their T-shirts say "Road Rebel," "Sayre's Truck Oasis," "Wild and Free." Drivers spend most of the day shut up in truck cabs, driving schedules that are sometimes impossible to meet legally. At truck stops they talk garrulously or sit with glazed eyes watching TV in rooms with bad air.

I began to think like a trucker. I needed a post office

one day when I was out West heading back toward home but, because it was Sunday, the one at the Tucson Truck Terminal was closed. "Oh, well," I thought, "there's that one at the Petro truck stop outside of Joplin. I'll use it instead." That's Joplin, Missouri, more than a thousand miles away. I had become a citizen of the city of the mind that stretches across this country from coast to coast, from border to border. Its streets are the interstates, and food, comfort and companionship are served up in its buildings, the truck stops near the exits.

You don't have to be a citizen of this city to use truck stop facilities. Here is how you take a shower if you haven't bought a lot of fuel (often, 50 gallons or more will get you a free one). You hand over $10 to the cashier in the travel store and she gives you a big fluffy towel, a bar of soap and a numbered key. She nods you in the direction of the shower area, which is a long corridor with locked rooms facing out onto it. Your key unlocks one of those doors. Inside there is a sink, a toilet, a big shower and a bench. The room is tiled and clean. After you have showered you take your towel and key back to the cashier, and she returns $5 to you.

When I got to the Joplin Petro, Exit 4 of I-44, I talked to the store manager there, Richard Leavens. He is a stocky, cheerful young man with glasses. He took me on a tour of the truck stop, which is vibrant, brightly colored, gleaming. He showed me the post office, the shower room, the laundromat, the Western Union and the fax machines. The travel store twinkles with heaps of chrome-plated exhaust pipes and other truck accessories. "We've got more chrome in here than any other Petro center," Leavens said proudly. I believed him. The TV room had enough chairs to make a movie theater and it had been filled over the weekend when 11 inches of snow fell in a late-spring storm, stranding truckers. Two hundred trucks had squeezed into the 28 acres of parking.

In the parts store at Triple T stop, Florida drivers Luther Jenkins (right) and Donald Puckett talk routes.

Leavens told me that more telephone calls are placed in truck stops than anywhere else except airports. In addition to the in-booth phones at the Petro

Vernie Hartle waits on hungry diners at Giant's food counter. While menus at many truck stops emphasize heavy foods—french-fried vegetables, potatoes and gravy, steaks and chops—salad bars that include soups and fruits are increasingly popular.

Frank Pierce, a driver from Arkansas, picks out a nightgown for his wife at one of Giant's many stores.

restaurant, there were banks of telephones near the shoeshine stand and most of them were being used as we talked. Out in the parking lot, Leavens waved his hand at the 100,000-gallon water-storage tank, the million-gallon fuel-storage area and the warehouse-size storeroom. He said that the chains are working hard nowadays to attract tourists as well as truckers to what Petro calls "Stopping Centers," but the preeminence of the professional driver had been made clear to me one night earlier in my trip when I stopped to fuel up. I used the self-service pump and went inside to pay the cashier. She started to take my money, then turned to take care of a trucker instead. His fuel bill was $314. Mine was $13.50. No doubt as to why I was the one who had to wait.

Early one Sunday morning in Arizona, I had my coffee at the Triple T, as it is called by those who have gone to it over the years. The Exxon Tucson Truck Terminal, one of the earliest big truck stops in the country, is at Exit 268 off I-10 east of Tucson. It was built in the mid-'60s by Ira Morris, who is still president but does not actively manage it any longer. Morris, according to trucking consultant Forest Baker, understood that "basically, truckers are just lonely guys. So he kept a cat and he had a rocking chair there, too, and the guys would come in and sit in the rocking chair and pet the cat, and the cat would purr and be as affectionate as could be and it was real homey. But Ira had trained that cat so no one could take it out the door. If someone tried, the cat would scratch and fight and wouldn't go."

The cat and the rocking chair were nowhere to be seen when I was there but the lonely guys were. They were in no rush to go and were staring off into space, smoking, drinking coffee and eating too much breakfast. For $5.25 you could buy the special: two thick strips of bacon, a slice of ham, two extra-large eggs, home fries, buttermilk biscuits with gravy.

Another morning on my way back East, a woman struck up a conversation with me in the dining room of the Truckstops of America facility at Exit 273 off I-40, just past Santa Rosa, New Mexico. She was waiting for

Couples dance in the 18 Wheeler Lounge, Truckers' Inn, popular stop located near Baltimore, Maryland. Lounge features live music most evenings. Atmosphere is relaxed and friendly but not rowdy. Indeed, truckers act "like true gentlemen," according to one regular.

Pat Branson of Catawissa, Missouri, gets some help at the wheel from his son during a truck stop break.

Two employees of truck wash at Amoco All American hose down a rig using pressurized steam and water.

Silvester Evans, who is from Shubuta, Mississippi, enjoys a video game with son Jeffrey at Truckers' Inn.

her husband, a driver, to come back from the shower. They had slept the night in their cab in the lot. She was plump, round-faced, hungry for talk. She had been driving with her husband ever since their children were grown and she was pleased they could work together. They lived in Wisconsin and regularly hauled school supplies between there and California. "I couldn't understand about the big distances out here before," she said. "I'd say 'Honey, can't you just press the pedal to the metal and hurry home?' He couldn't and now that I drive with him I can see why." Her husband arrived, clean and freshly shaved, and they turned their attention to the menu. The wife exclaimed over the French toast, which she remembered having had there before. She ordered it, asking the waitress to make sure it had extra powdered sugar.

Almost all professional truck drivers are men. Women constitute only about 4 percent of the workforce, but truck stops have been catering to them for years. There are women's restrooms in the drivers' sections; showers and laundry facilities are open to all. The travel stores stock hair curlers and cosmetics as well as shaving cream.

Women drivers: let's give 'em a break

Still, women are such a tiny minority that sometimes, when I stood in the doorway of a darkened TV room or wandered into a lounge late at night, I was conscious of being an outsider. For many years women in truck stops were of two sorts—waitresses or prostitutes. And when women began driving they were suspect. An article in a 1985 issue of *Road King* laid out the problem: "The most degrading experience of all for women truckers is the fact that they are asked to leave parking areas, restaurants, and truck stops because they are (1) women and (2) alone. It is presumed that because they are alone they may be soliciting."

Truck stops have tackled the problem of "lot lizards" by fencing off truck parking areas and barring admission for pickup trucks or cars. Most have signs that say "No Soliciting on Truck Stop Property" or words to that effect. Some sting operations have been set up and many lots are patrolled by security guards. But regulating the world's oldest profession is as difficult in this city of the mind as it is in any other city. And CBs make it easy to make connections.

The CB also makes it easy to buy drugs. Truck stop drug sales are much discussed in all the current industry magazines. One driver from Indiana recently complained to *Truckers News*: "You know it's bad. I've never seen it so bad as it is today. It seems like everybody has given up. In a lot of truck stops or rest areas a guy will get on the CB and advertise what they are selling, or a driver will say what he wants to buy."

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In full trucker regalia, James Turner of High Point, North Carolina, glowers beside his Kenworth tractor.

After I got back to the East Coast, I invited my husband out for a trucker's date. I'd read that the Texaco Truckers' Inn at Exit 41 off I-95 south of Baltimore had a hot tub. It didn't, it turned out, and its swimming pool was closed for the season, but what the Truckers' Inn did have was live entertainment every night. So we had a dinner of steak and fries, and then went downstairs to the 18 Wheeler Lounge. There was a cover charge of $2 a person to get into the smoky, low-ceilinged room. A couple of TV sets were in operation at one end. There was a sign over the bar that read: "On duty drivers please do not ask us to serve you alcoholic beverages."

When we came in, the band (drums, pedal steel guitar, two electric guitars and a violin with a pickup) was playing "The Twist." There was a crowd of at least 100 truckers and groupies, most of them dancing. We slung our jackets over chairs at a vacant table and elbowed our way out onto the dance floor. My husband was wearing a bad, bad, black T-shirt I had bought him when I was on the road. It had a shimmering truck bursting out of the legend "Truckers Make America Great." He was also wearing a cap that said "Coast to Coast." I was wearing my Mack cap and a matching T-shirt that said "Road Rebel."

The crowd was a friendly, relaxed one. There were some pitchers of beer sitting on the tables but no one was drunk or rowdy. Some of the groupies started out on the dance floor together but partners switched during the rock'n'roll numbers. "CAT Tractor" moved opposite me, grinning. When the band started playing country and western, two fat women (one without shoes) danced with a tiny man. A girl with a very short skirt and long, black-stockinged legs stomped tirelessly in her high-heeled red shoes with bows at the back. At the beginning of a slow number, "North American Van Lines" led out a dignified, conservatively dressed young woman and held her delicately; they danced with enough distance between them to have pleased the chaperones at my 1950s high school. Other couples clutched, petted, hugged passionately, kissed wetly. The stars of the evening, to me at least, were four dark-eyed young truckers who spoke in Spanish. They were wearing the usual trucker garb but when they came out on the dance floor I noticed that one of them had silver toes and heels on his cowboy boots. They were wonderful, sexy, skilled dancers. I yearned to have Silver Toes ask me to dance. He didn't. I'm older by a quarter of a century, and only a sometime resident of his city.

After a rugged day on the trail, a modern American cowboy lights up before ambling over to the cookhouse.

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tances on wet, slippery roads. Hardly a luxury one wants to be without.

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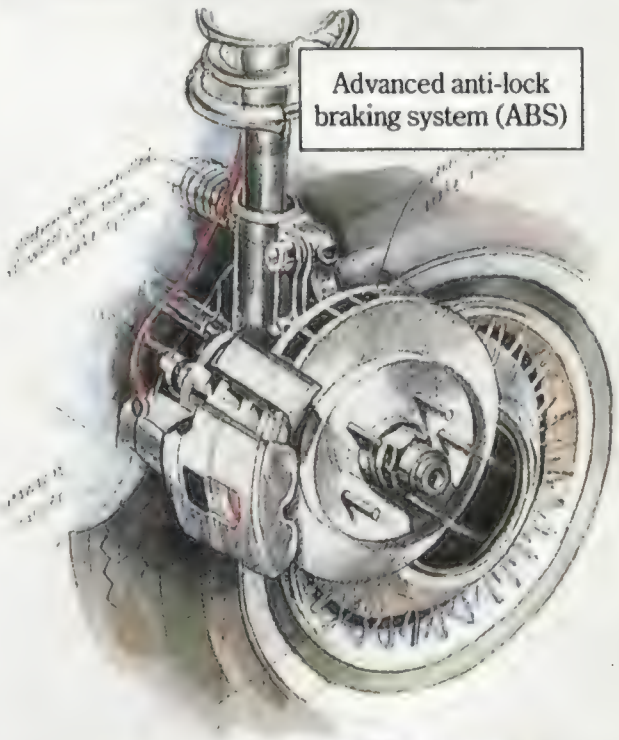

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There Is No Luxury Without Engineering.

By John Seidensticker with Susan Lumpkin

Playing possum is serious business for our only marsupial

Brainy it's not, but this 'primitive' species knows enough about feeding and breeding to expand its territory in spectacular fashion

Author picks up signal of radio-collared opossum at his study site in Blue Ridge Mountains of Virginia.

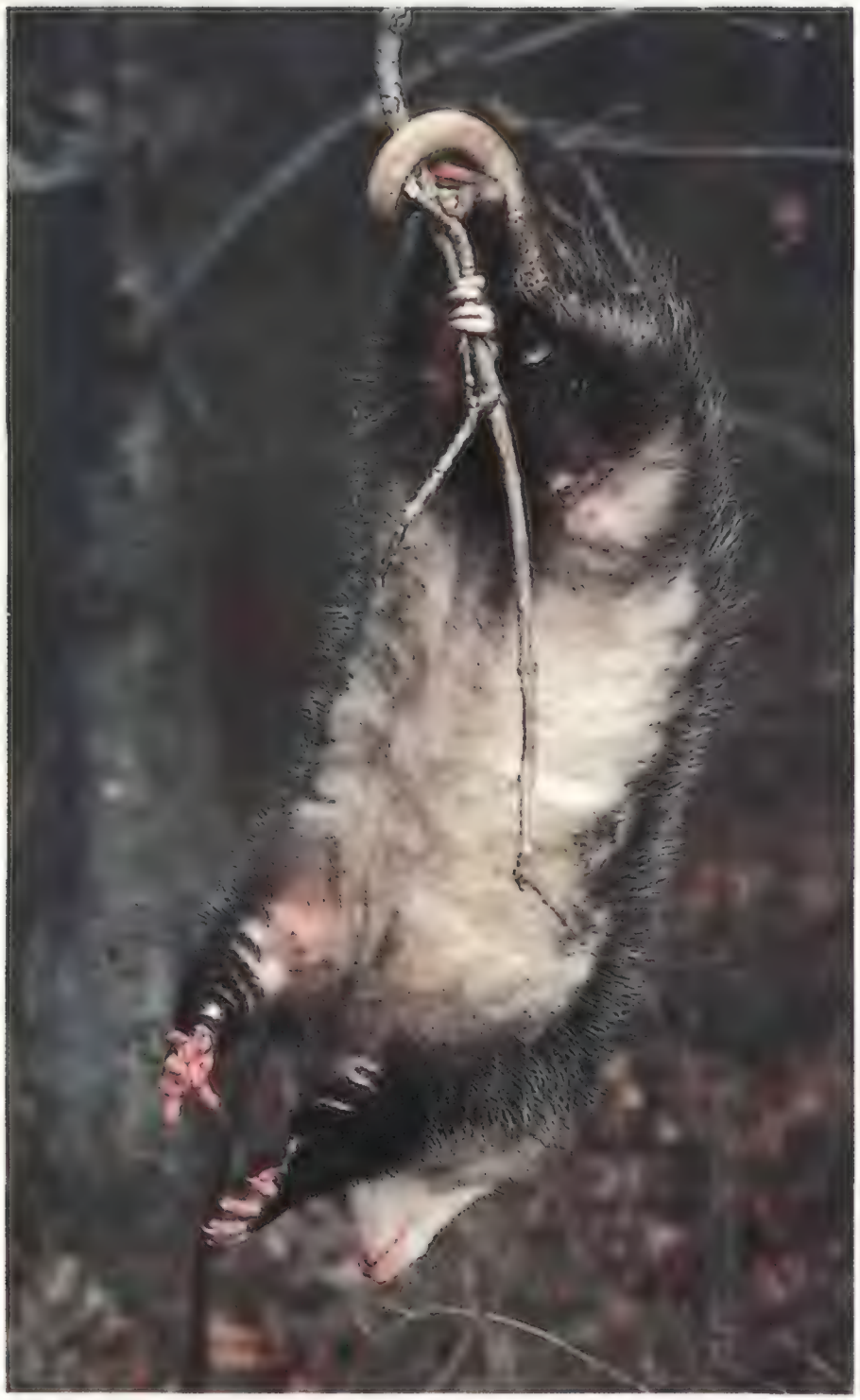
With a resounding clatter, the pliers hit the stainless-steel tabletop. The anesthetized animal whose ear I was trying to tag with an identification number jerked her head to the side and clamped her teeth—it felt like all 50 of them—onto my index finger. Then she promptly went back to sleep, my finger locked firmly between her jaws. With some difficulty, I extricated myself from that situation and then finished up opossum No. 58, who was part of a study I was conducting at the Smithsonian's Conservation and Research Center near Front Royal, Virginia, about 80 miles west of Washington, D.C. (SMITHSONIAN, January 1980).

It's hard to imagine a more appropriate setting in which to investigate the natural history of this continent's only marsupial, the opossum—otherwise known to some laymen as just plain possum, and to scientists as the Virginia opossum or *Didelphis virginiana.* The 3,000-acre Center, a division of the National Zoo, lies on the western slope of the Blue Ridge, adjacent to Shenandoah National Park. Its hilly landscape is a mixture of second-growth oak and hickory forest, scrub thicket, old fields and hay meadows. Although the topography is steep, it is well watered. Spring-fed runs lace the forested hollows and, where drainage is restricted by underlying geological formations, small muddy seeps appear. Shrub-covered marshes rim the bottoms of the hollows, where woods abut the broad expanses of the Shenandoah Valley. My study site, Posey Hollow, included nearly 1,500 acres of this diverse habitat.

When I started what was to become a five-year investigation, it sounded like a cinch. Opossums, after all, were easy to entice into box traps and seemed to be quite numerous. I assumed they were slow and simple creatures; "stupid" is the word nonscientists often use to describe them. Only their nocturnal habits had stymied the efforts of earlier investigators—a problem I was sure I could solve with plenty of coffee and advanced radiotelemetry equipment. But it soon became clear I had greatly underestimated the challenge. The supposedly primitive opossum turned out to be a lot more efficient and sophisticated than I had anticipated.

As part of my study, I wanted to obtain complete records of the nightly movements of opossums to learn where, how and on what they were feeding. I was

Clinging to a slender pine branch, a curious opossum eyes an intruder. Creatures are most active at night.



Hanging by hind feet, an opossum in Pennsylvania ponders next move. The tail is used mainly for balance.

amazed at how difficult this was turning out to be when my friend Fred came to the Center from Washington, asking to learn more about radio-tracking and offering to help out. I set up the task: without disturbing it, follow one male opossum for 24 hours; obtain its precise location every hour and identify any other areas it frequents. So off went Fred early one spring afternoon, starting his observations near the burrow that male opossum No. 43 was using that day. The next morning, some 15 hours later, Fred returned, exhausted and exasperated. He had struggled through the thick brush and labored up the high ridges, attempting to determine the direction of the fading and bouncing beeps from the radio collar I had attached to the animal, but not once had he established its exact location. The foraging opossum had spent the entire night moving around—Fred determined that much—but even armed with a very sophisticated radio-tracking system, he could not keep up with it.

My colleagues and I spent many nights in similarly dogged pursuits. I used to dream about opossums coming out of their dens, dozens and dozens of them all at once until Posey Hollow was awash in opossums. They would scurry around all night and hole up near dawn—some in the same den they had used the night before, others in different dens. A few would move out of the hollow completely and relocate at the edge of a pond or spring several miles away. I would dream I couldn't get a handle on what any of them were doing out there. Funny thing was, those nightmares were a fairly accurate reflection of what was happening in real life.

Learning about life on the fast track

Before I started working with opossums, I had studied large mammals living in large landscapes—mountain lions in Idaho, tigers in Nepal. The life of a big cat or even a raccoon flows with the seasons at a pace that seems almost leisurely compared with that of an opossum. As I was to learn, the lives of most opossums are over in a year or two. But during that short span of time, the animals manage to do what it takes to be a successful species—produce more opossums.

Pouched mammals, including kangaroos, wallabies and koalas, are more commonly associated with the outback of Australia than with the Virginia countryside or a backyard in the nation's capital. Where marsupials originated is a matter of debate. Some paleontologists say North America because the oldest marsupial fossil—85 million years—was found in what is now Alberta, Canada. Other scientists claim a South American origin.

In any case, the animals evolved during the Cretaceous, when this continent was still connected to the huge landmass known as Gondwanaland. Sometime

"Playing possum," animal stays motionless with eyes and mouth open. It can maintain this act for hours.

Opening jaws wide, possum threatens a curious dog. It is far more likely to flee or feign death than to fight.

after marsupials developed, Gondwanaland separated from North America and began to break apart. One section of it, the continent we now know as Australia, drifted with its population of marsupials to its current position. Another section, Antarctica, whose only known mammalian fossil is a marsupial, moved to the South Pole and became covered with ice. A third section, South America, ended up isolated in its present location where, during millions of years of solitude, its marsupials radiated into a rich assemblage of species: small insectivores, huge jaguarlike and hyenalike carnivores, and omnivores large and small.

About five million years ago, North America and South America were reconnected. This suddenly opened the door to a massive invasion of bears, cats and other immigrant mammals from north to south. Faced with these superior competitors, South America's marsupial carnivores soon disappeared. Many small marsupial insectivores and omnivores persisted, however, and today South America and Central America are home to about 85 species of these animals, which constitute roughly a third of the world's total.

Only one marsupial managed to go against the flow—the common opossum moved north to colonize Mexico. Alfred Gardner, a mammalogist with the U.S. Fish and Wildlife Service who works at the Smithsonian's National Museum of Natural History, has shown that, within the past 75,000 years, what we know as the Virginia opossum diverged from the common opossum to become a distinct species. The creature then advanced to the United States, becoming the first marsupial to make it in North America in more than 15 million years. Why is it called the Virginia opossum? Probably because it was in Virginia that the English explorer John Smith saw it and became the first European to report its existence.

By that time, opossums were living as far north as what is now Indiana and Ohio, and as far west as New Mexico. Since then, they have expanded their range at a phenomenal rate. They now occupy perhaps 42 states and two Canadian provinces (Ontario and British Columbia), and they're still on the move. They thrive in an improbable variety of habitats, from sea level to more than 9,000 feet, from virgin forest to urban jungle. Only deserts, with their ephemeral food and water resources, and the too-cold winters of northern Canada seem to be unsuitable.

Some of this incredible range expansion has been aided by human activities. For instance, a few opossums—including a number of escaped pets—were introduced into California around the turn of the century and the population boomed there. By 1930, the animals inhabited the entire West Coast. Garbage and newly planted fruit trees helped them gain a solid foothold and survive.

So here we confront what appears to be a stunning contradiction. Opossums have proven themselves to be opportunists par excellence. Yet they exhibit none of the traits we most admire in mammals, seeming to be short on brains, sociability and personality. You can't help wondering: How can this be?

First of all, let's take brains. Those of Virginia opos-

John Seidensticker is associate curator of mammals at the National Zoological Park. Susan Lumpkin edits ZooGoer, *the magazine of the National Zoo.*

A pair of 15-day-old possums, only around 1½ inches long, cling to nipples inside their mother's pouch.

Youngsters eagerly clamber onto mother's back. They begin traveling like this after about 80 days in pouch.

sums, and of most marsupials, are small. Other things being equal, small brains contain many fewer neurons and vastly fewer connections between the neurons than do large brains. The fewer the neurons and the fewer their synaptic connections, the less capable the brain is of making associations, processing complex information, and remembering and keeping track of previous experiences.

Biologists commonly estimate a species' intelligence by computing an encephalization quotient (EQ). This is a measurement of how that species' brain size compares with the average brain size of all other species of similar body size (to make "other things" equal). An EQ greater than 1.0 means that the species has a bigger brain than average; an EQ less than 1.0 means that it has a smaller brain. Man has an EQ of about 7.5. The raccoon scores about 1.4. And the opossum? Somewhere between 0.35 and 0.57. As mammalogist John Eisenberg once put it, "This critter is playing with about a third of a deck."

One consequence is that opossums do not display complex avoidance responses following negative experiences. I found, for instance, that they can be trapped repeatedly far more easily than raccoons. They also have a fairly limited behavioral repertoire. When confronted by a predator, for example, an opossum first tries to bluff with a hissing or growling display of teeth. If this doesn't work and the animal is attacked and shaken, it goes limp, defecates and emits a foul-smelling, greenish ooze from its anal glands. How well this works to save the opossum from becoming an owl's dinner is unclear (actual acts of predation in the wild are almost never seen), but it may sometimes take the predator off guard just long enough for the opossum to run away. Other mammals also feign death to deter predators, but this behavior is so closely identified with the opossum that "playing possum" has long since become idiomatic.

An animal that has a limited behavioral repertoire usually leads a mostly solitary existence. Except for relationships between mothers and their young, which last about three months, no family ties clutter the lives of opossums. In one ranking of the complexity of mammalian social systems, the opossum earned a 2, on a scale that starts at 2 for "least complex" and ranges to 20 for "most complex."

Even mating, characterized in so many species by elaborate courtship rituals or prolonged pair bonds, is merely a brief, businesslike encounter for opossums, with males and females controlling their mutual antipathy only for as long as it takes to get the job done. Females are ready to breed again in about 100 days, but in Posey Hollow the duration of a male's stay in the entire study area averaged about 140 days, and during that time he was constantly shifting his range.

For their size, opossums are among the world's shortest-lived mammals. In captivity they have been reported to reach the ripe old age of 4, but in the wild a 2-year-old opossum is downright hoary. Few opossums that survive through weaning live much past their first birthday. Only 8 percent of Posey Hollow's females and 5 percent of the males were present for

A bedtime story in Aomori.

Told across an ocean.

"Is she still awake?"

"Barely."

"Let me kiss her good-night."

"Hi, Grandpa."

"Hiroko, what are you going to dream tonight?"

"That it's 4 o'clock in the morning and I'm dancing around the house because Mommy and Daddy forgot to put me to bed."

"Good-night, Hiroko."

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Fluffy juveniles "play" follow the leader. Loners as adults, opossums are found in groups only when they are littermates. A litter may contain 10 to 15 young. Females rarely have more than two litters in a lifetime.

more than a year, and my longest-lived female, old No. 110, was around for just about 28 months.

Some opossums starve to death, some freeze or succumb to disease and parasites, and others are taken by predators such as owls, snakes, dogs and humans. In fact, hunters, trappers and, most prominently, motorists probably kill more opossums than all other predators combined. Opossums are hunted for food and sport in many rural regions, and about a million are turned into fur coats and collars each year—in 1982-83, the value of this harvest was slightly above $3 million. But in my study of the 23 radio-collared or ear-tagged opossums I identified after their deaths, 35 percent were road kills and only 4 percent were captured by local trappers.

Many of these creatures die of plain old age. They just wear out. By the end of their second winter they look like they've had it. Their ears and tail are short and ragged from frostbite, and they are scruffy and thin. Even their teeth are worn down. In contrast, the opossums entering their first summer of reproduction look fresh, healthy.

Opossums are designed to accomplish in their brief lifetimes what other mammals take 10, 15 or, in the case of yuppies, some 30 years to achieve. Despite their intellectual, behavioral and social shortcomings, they have no trouble replacing themselves—and then some—in one fast-paced year. My study provided ample evidence of the animal's reproductive abilities.

Posey Hollow is perfect opossum habitat—most of the time. If anything is absolutely essential to opossums it is water in springs or streams: water supports the prey—small mammals, insects, snails, crayfish and other invertebrates—on which they rely to survive the summer. But in the hot summer of 1980, one of the worst droughts of the past 50 years hit the hollow. Streams stopped flowing, springs disappeared; by summer's end, water was as scarce as saffron. As a result, the opossum population of Posey Hollow plummeted from 14 to 3 between June and August. And this was the period when young should have been increasing the population. With fall, however, came an abundant crop of fruit—grapes in particular, the opossum's major autumn food. By December of that year, 13 opossums were living in Posey Hollow and by November 1982, just two years later, there were 45. Given about 27 months of favorable conditions, the population had increased 15-fold!

The marsupial mode of reproduction may be evolutionarily primitive but it is definitely not inferior. Marsupials are born after a short gestation period and then continue to grow and develop while attached to the mother's teats. The mother nourishes her young almost entirely with milk. Most other mammals give at least as much time to gestation, when the young are nourished through the placenta, as to lactation. The

Mary Brodie won't feel the lump in her breast for another two years.

Like a lot of women, Mary Brodie understands the importance of regular breast self-examination. And because she's never felt a lump, she thinks everything is fine. It's the same conclusion a lot of women reach.

Unfortunately, it's wrong.

The tiny tumor that's forming in her breast is too small to feel. But with mammography, it's not too small to see.

And tomorrow Mary is getting her first mammogram. Thanks, in part, to a new x-ray film created by DuPont that makes it safer for women to start mammography early.

And for Mary, early detection means a two year head start on the rest of her life.

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end result, though, is the same: offspring ready to face the world on their own.

Virginia opossums possess a number of traits that enable them to reproduce quickly, including early sexual maturation, limited parental care and rapid development. Males reach sexual maturity at 8 months. A female opossum is sexually mature the first winter after her birth, when she is only 6 to 9 months of age. In the next nine months, she will rear two litters of young and then quit; females rarely live long enough to reproduce a third time. The litters are large, sometimes numbering as many as 15 young each. Posey Hollow females averaged 9 per litter. Producing 18 young in a single year is prolific by any higher-vertebrate standard. Nonetheless, opossums often give birth to many more than that.

After a 12- to 13-day gestation, anywhere from 2 to 50 babies are born—looking like tiny, translucent preemies about the size of a raisin. These embryos are blind and deaf, with undeveloped but functional circulatory, respiratory and digestive systems, skeletons of cartilage, and an incomplete central nervous system. Only their front legs and clawed fingers show more than rudimentary development, and these are put to immediate use when the infant opossum travels the two inches from the birth canal to the mother's pouch.

Mortality is high among the newborn. Some perish during that first arduous journey. In large litters, others reach the pouch but cannot find a teat to attach themselves to (females usually have only 13 teats and sometimes not all of them are functional). Once attached, however, most of the young survive until they are weaned some three months later, all the while enjoying a free ride in the pouch. And that ability to carry the youngsters around gives female opossums an enormous advantage.

All animals whose offspring require parental care face the same problem: What do they do with the kids when they want to go out to dinner? The most common solution is for the mother to leave her youngsters in a nest of some sort. Since the children are dependent on her milk, she can range for only so far and so long before she must return to feed them. A mother raccoon, for instance, covers just 15-20 acres while foraging each night, compared with 35 acres after her youngsters are on their own. Within that limited time and distance, she must find enough food to support not only herself but her litter as well.

But opossum mothers don't have to worry about rushing home to feed hungry mouths. They aren't tied to any one den and can rest after a long night's foraging in the closest den available—one that may also be close to the next night's meal. Only for about a week, when her young are about to be weaned, does the mother leave them in a den while she goes out alone. After that, they again accompany her on foraging trips, now riding on her back or running along beside her. Although it is widely believed that youngsters travel by hanging from their mother's tail, this has

The opposed big toe on an opossum's rear foot is used like a thumb to grasp branches when animal climbs.

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And with a well-appointed, fully-equipped interior that includes a Clarion six-speaker AM/FM stereo cassette player and air conditioning with automatic climate control, the Sportswagon may even postpone the inevitable question: "Are we there yet?"

Like most wagons, the 405 Sportswagon can hold your groceries. But unlike most wagons, it can also hold your interest.

Car shown is 405 DL Sportswagon.
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PEUGEOT
NOTHING ELSE FEELS LIKE IT™

In a cuteness contest, a pet opossum (right) wins by a nose over commercial version (left) and a toy raccoon. Perhaps that's why it often turns up in songs, folklore—and even a well-known comic strip.

never been documented in the wild by scientists. Nor has another popular notion—one recently reinforced by the celebrated cartoon character Pogo—that adult opossums sleep upside down, hanging from tree limbs by their tails.

Opossums will eat almost anything. Their idea of a feast is a rotting white-tailed deer carcass, a noisome pile of garbage or a fresh bag of kitchen scraps. In Posey Hollow, a host of earthworms coming to the surface on a humid night may be one evening's main course, and the next night a nestful of bird eggs might do the trick. A fruiting persimmon tree is an autumnal entree. But opossums do not set out in the evening looking solely for such sumptuous meals. Between bonanzas, they glean a diverse array of fairly small items, eating them indiscriminately as they find them.

After leaving its den at dusk, an opossum may poke its nose into some leaf litter and turn up a few snails or a caterpillar. Its fingers inserted into a crevice between the ground and a fallen log discover a cluster of insect eggs or a couple of juicy slugs. A garter snake slithers by and suddenly feels 50 sharp teeth, and a crayfish in a tiny spring meets a similar fate. So the opossum usually goes through the night, night after night, finding a mouse here and a mushroom there, carefully combing a small area of all that is edible and easily caught until the place no longer yields enough food to make the effort worthwhile. Then the animal moves on. Just like that. The opossum's mental processes are quite straightforward; the connection between stomach and activity is direct.

Females usually move abruptly, fast and far. One night I tracked a Posey Hollow animal carrying youngsters in her pouch as she traveled more than a mile to a new foraging area. Such long-distance jaunts are common. At other times, a female may cover nearly three miles over three consecutive nights before finding a good foraging site and settling into a new den. Then she will frequent that same few acres for several nights in a row, never ranging more than 700 yards from her den until she suddenly moves on again.

I found that the male's movement pattern is different. Unburdened with young, he usually gleans over 25 acres on an average summer night, compared with a female's 10. And rather than moving abruptly, the male gradually and continually shifts his foraging range. This is what makes the life of a dedicated radio-tracker miserable. Most of the males in my study drifted through and out of the Posey Hollow region within a few weeks or months.

Opossums in rural areas can thus lead the life of a lonely nomad constantly in search of greener pastures. In suburban or urban habitats, however, where food provided by humans is readily available, an opossum might not move at all, living its entire lifetime in a single backyard.

"An Opassum hath a head like a Swine, & a taile like a Rat, and is of the Bignes of a Cat." That's how John Smith sized up the animal in 1612. Accurate, but hardly likely to endear opossums to the reader. Still less endearing is the usual modern sight of this creature: dead on the side of the road, bearing the imprint of a

tire across its back. But to catch a glimpse of six or seven bright-eyed youngsters peering out of a pouch is to be charmed—even as their mother tears up a garbage bag in your backyard.

We, at least, were charmed by the opossum family that found the garbage we put out every evening on the porch of our house in a Northwest Washington, D.C. neighborhood. Evidently our yard was a good place for an opossum to raise a family, and somehow the thriving presence of those wild animals made urban living more bearable for us.

Opossums are often the first mammals to return to cities and suburbs when, years after housing construction has left the land barren, gardens and trees grow up to soften the streets and sidewalks. They are a sign that a neighborhood has matured and mellowed—that its residents and their homes have become part of a diverse, life-enhancing habitat. The appearance of opossums suggests the awesome power that nature has, given half a chance, to reclaim lost ground.

My father-in-law, who bought into a soulless, post-World War II housing tract outside Detroit in the 1950s, reacted to the discovery of an opossum in his neighborhood with the excitement a conservationist might feel at the sighting of a dodo. It mattered little to him that opossums, and then raccoons, were eating the fruit off his pear tree. Detroit is at the northern edge of the opossum's distribution and there, as has happened elsewhere throughout the country, human activities suddenly provided a hospitable environment, enriching the lives of both species.

Opossums have the additional virtue of being almost harmless. When rabies exploded among the raccoons I was studying in Posey Hollow, I found not a single rabid opossum. While a rabid raccoon will attack cats and dogs, an opossum poses no threat to pets. A barking dog, on finding this furry intruder at its bowl of Purina, elicits the typical hissing threat, followed by the opossum's retreat. A small- or medium-sized dog will rarely pursue the opossum—the match might be too close. Cats seem to be too smart to get into a fight they might lose. Only large dogs will tangle with an opossum—and they always win. So if you find the presence of marsupials in your yard undesirable, the solution is simple. You can acquire a large dog. Or you can simply stop leaving food outside, and the animals will move away—probably no farther than one of your neighbors' houses, where they can resume their single-minded pursuit of the two things that matter most to them. Feeding and breeding.

Healthy-looking adult strikes a classic possum pose in a wintry woods while scaling a tree hand-over-hand.

A forbidden city. An underground railroad. Children of the naturalized, and a charismatic leader.

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Thousands of British children came to America during the 1940s, to escape the bombings and become temporary Yanks.

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war, men of song, a crusading woman. The naturalists,

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Underground Railroad

The triumphant story of the men and women, black and white, who carved escape routes out of slavery in the 1800s.

Forbidden City U.S.A.

At this San Francisco nightclub in the 1930s, Chinese-American entertainers pursued a passion for Western music and dance.

Adam Clayton Powell

A film portrait of one of the most charismatic black politicians in our nation's history.

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TAKE UP THE SWORD OF JUSTICE

A paper army that helped pull America into World War I

With the United States neutral in the war's third year, posters that raised men and money 'over there' came over here to do the same

Seventy-five years ago, as Europe's armies settled into the stalemate of trench warfare, the embattled nations unleashed what may have been the most powerful weapon in their arsenals: the World War I poster.

For the first time, the state made use of the illustrated poster for mass communication. As weeks of war turned into months, the talents of an army of artists were enlisted to publicize causes from recruiting to financing the war machine to maintaining morale to caring for the wounded, prisoners, orphans and refugees. In this era before television and radio broadcasting, the poster was the quickest and most effective means of getting a message across to a large population.

That message was carried to the United States by relief organizations that mounted traveling exhibits of war posters in which the reality of the conflict was graphically brought home to the still largely isolationist American public. A combination art show, camp meeting and news report, a poster exhibit aimed to raise not only money but consciousness.

On these and the following pages are selections from an exhibit that toured the country in 1916. Artists from Britain, France, Italy and the Netherlands portrayed the war in all its aspects. Britain's Frank Brangwyn and France's Swiss-born Théophile Steinlen, masters of the commercial art poster, produced scenes of stark realism composed at the front. The cheerful ragamuffins of Francisque Poulbot could pull a franc or two out of any Frenchman. One of the few to depict the horrors of the war, Louis Raemaekers was tried for jeopardizing the Netherlands' neutrality and the Germans offered a reward for his capture. Many of the posters advertise art shows to raise relief funds. On one, Renoir, Rodin, Lalique and the father of the poster, Jules Chéret, are listed as committee members.

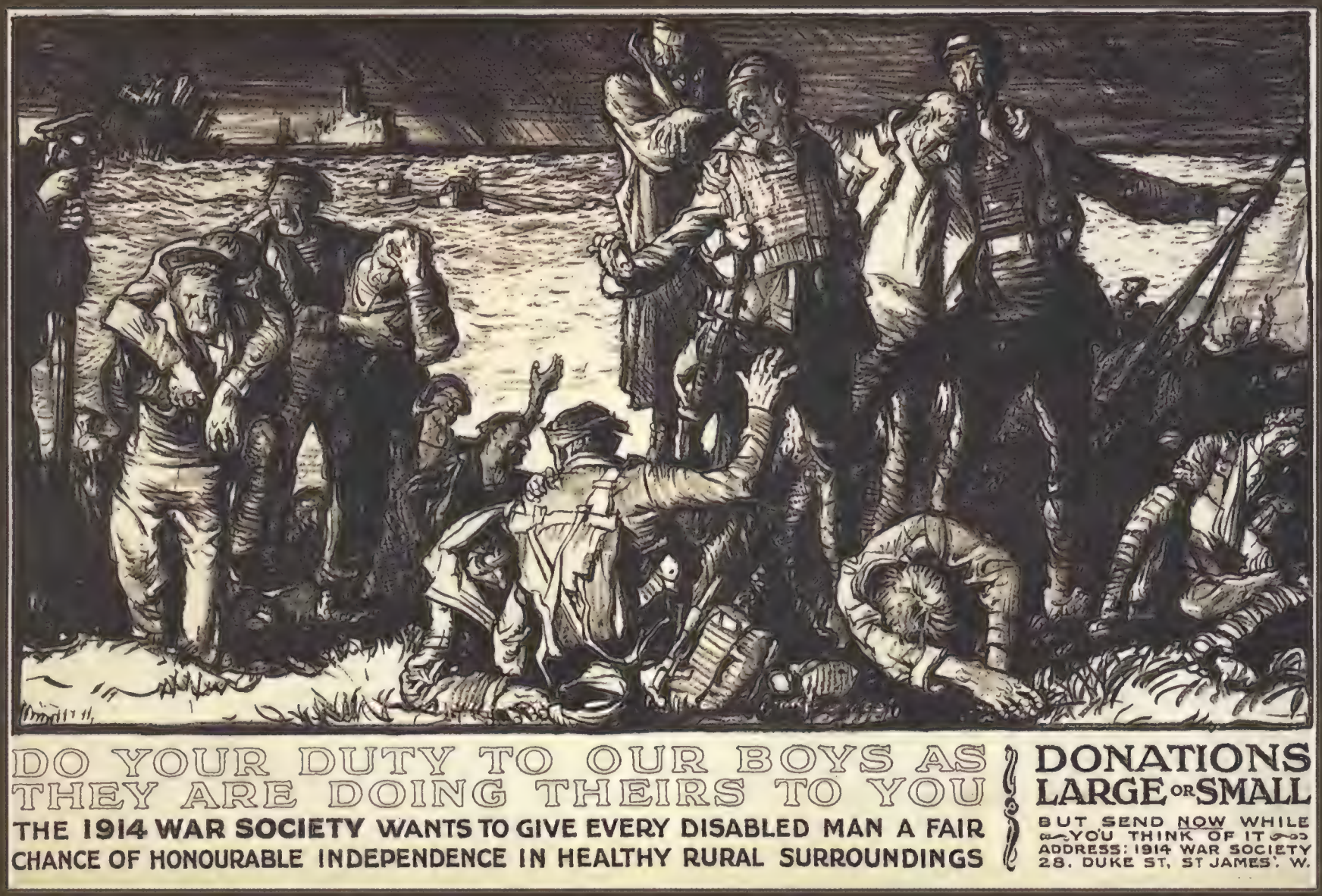
The tour apparently ended at Camp Devens, Massachusetts. Within months of the show's arrival, America entered the war and U.S. artists too began turning out posters that spoke persuasively to the public. Now Uncle Sam and the Statue of Liberty urged Americans to enlist, buy war bonds and support the Red Cross.

And soon the men of Camp Devens began shipping out for France. Among them was the soldier in charge of the poster collection. It seems he gave it to a friend from home, a young woman named Ruth Crosby, who was studying art at nearby Wellesley College. Maybe because she was about to graduate, the collection was put into storage and forgotten. Sixty years later, an old wooden packing case addressed to her was found in the trunk room of her dormitory. Inside, wrapped in an oilcloth packed in straw, lay a time capsule of World War I in the years 1914-1916.

Suzanne Crawford

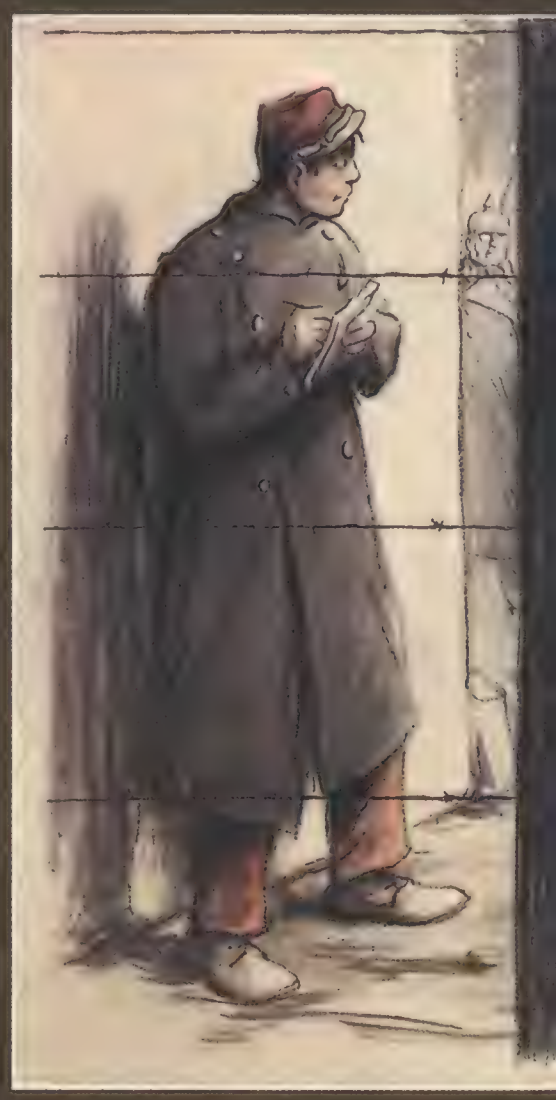
A rugged mountain soldier, symbol of Italy's alpine war against Austria, urges his parents to buy bonds.

Britannia gives a call to arms after the *Lusitania* is sunk, in Bernard Partridge's 1915 recruiting poster.


DO YOUR DUTY TO OUR BOYS AS THEY ARE DOING THEIRS TO YOU
THE 1914 WAR SOCIETY WANTS TO GIVE EVERY DISABLED MAN A FAIR CHANCE OF HONOURABLE INDEPENDENCE IN HEALTHY RURAL SURROUNDINGS
DONATIONS LARGE OR SMALL
BUT SEND NOW WHILE YOU THINK OF IT
ADDRESS: 1914 WAR SOCIETY 28. DUKE ST, ST JAMES'. W.

Frank Brangwyn's plea for aid to disabled veterans pairs hardships of the troops and an appeal to duty, a fundraising formula often used.

A gendarme directs civilians to the French Ministry of Finance, which must divide funds between the military and refugees displaced by shelling, invasion.



Francophile Anne Morgan, daughter of J. P., created this charity to provide medical supplies to military.

Few could ignore Raemaekers' entreaty for food for Belgium, occupied by Germany, blockaded by Britain.

EXPOSITION
DE TABLEAUX DE MAÎTRES MODERNES
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Dimanches et Fêtes compris
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DEVAMBEZ IMP. PARIS

Art dons the uniform (left) with sale of works by "modern masters" to supply clothes for prisoners.

On Package Day, as Poulbot's gamins show, children can make a "soldier's box" so "Papa won't catch cold."

For the soldier on leave and his *chérie*, Parisiana, King of the Movie Theaters, offers a daily matinee.

Sensational serials such as "The Guys of the Fleet" kept readers of the French paper *Le Journal*, and Yankee exhibit-goers, primed for the fight.

"For France, pour out your money," Abel Faivre's poster commands, as the Gallic rooster smites the German soldier, proving "Money fights for victory."

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VERSEZ VOTRE OR

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From Robinson Crusoe to Mme. de Pompadour and after, the beloved brolly has been busting out all over.

By Israel Shenker

Yoicks! Yoicks! and Brolly ho! Rah for the *parapluie*!

Nobody knows who invented it, probably the Egyptians, but through the ages the trusty umbrella has covered a multitude of sinners

When a pilot on standby sits in his Royal Air Force Harrier jet, in sun or rain, with the air-conditioning off, he opens the canopy and keeps cool and dry under a fitted cockpit umbrella. If suddenly scrambled, the pilot quickly stows the umbrella. It can now be revealed that this ultimate defensive shield has also been used by the U.S. Marine Corps, which temporarily swallowed its pride and followed the British leader.

All it took was a contract with Sol Schaverien and Sons, the venerable London umbrella makers who are on the leading edge of umbrella technology. To keep water from dripping through needle holes in umbrella fabrics, Schaverien uses a synthetic filament with cotton wrapped around it; when wet, the cotton swells and fills the holes. And when it comes to filling a hole in the market, the company produces an umbrella with a contemporary handle shaped like a five wood. Even with the third and fourth generations of the family now at work on R&D (known in the company as Rain and Downpour), managing director Stanley Schaverien

Rain or shine, in war or peace, for crime as well as punishment, its versatility can hardly be matched.

reports it is an uphill battle trying to persuade the British male to buy any brolly except in black.

In earlier days, great inventions and monuments were the work of anonymous craftsmen. Today the great innovators—the Schaveriens of our time—are heralded by the media and treated as heroes. We may be puzzled about exactly who built Reims cathedral or have our doubts about Shakespeare, but total uncertainty surrounds the question that has obsessed historians for centuries: Who invented the umbrella? But as any Briton will attest, whoever did the deed, no one has been a greater benefactor to the species.

In Old Kingdom Egypt (circa 2686-2160 B.C.), Nut, the celestial goddess, was compared to a parasol, her body arching over the world. By 1200 B.C., Egyptian nobles sallied forth under parasols borne above them by slaves, thus creating what David Piper, student of the science of "Geo-Brolliology," describes as "a private and perambulant oasis." Yet Chinese legend has it that the umbrella was invented sometime before 1000 B.C. by the wife of the carpenter Lu Pan, who boasted that she could make portable roofs. China's emperor was a monarch apart—with an umbrella of four stories, like a pagoda. During the Ming dynasty (1368-1644), officials of the first to fourth ranks merited an umbrella with three flounces. Siam's king honored himself with seven-storied umbrellas and Burma's great man was known as the "Lord of the Twenty-four Umbrellas." On ceremonial occasions, Japan's mikado was attended by a servant bearing a red silk parasol, emblem of absolute power. Anyone who doubts it may consult the words of John Ruskin, the 19th-century critic and man of letters, who noted that "Carlyle carries my umbrella for me as if he were attending the Emperor of Japan."

The serious Romans used the umbrella mainly in its alternate role as parasol—to protect citizens from the Mediterranean sun. In India, however, it was associated with gods of fertility and harvest, death and rebirth. Vishnu, a Hindu god, brought back from hell a rain-*giving* umbrella. The sacred fig tree—celebrated in the

Illustrations by Arnold Roth

The serious Romans used the umbrella in its alternate role as parasol—to protect the citizens from the sun.

story of the Buddha—is depicted adorned with garlands and umbrellas. When princes died, umbrellas went with them into the grave, posthumous weather being uncertain to the utmost degree. Today umbrellas in India are carried to lend dignity to humble bearers.

The umbrella figured prominently in secular and religious ritual in Ethiopia, and in Morocco, where the royal Shereefian umbrella, symbol of kingship, was sometimes 11 feet high. In Dahomey (now Benin), the king's umbrella was adorned with 84 human jawbones and topped with a human skull.

Despite its global appeal and wide-ranging tradition, probably the only place in the world described by its own tourist brochures as a "Region of Umbrellas" is Gignese, a hillside village in Italy. The itinerant umbrella makers of Gignese used to leave home in spring to hawk their wares and return in autumn speaking a jargon of their own, compounded of elements from Piedmontese, Lombard, French and Swiss German. Just as the clouds were gathering for World War II, Gignese, with reverence for the past, started putting together the collection for the Museo dell'Ombrello e del Parasole, the proudest ornament of the village. The cornerstone laying was a great day. The museum displays with pride a picture of the occasion: it is raining and all the dignitaries are under umbrellas.

The world's most famous umbrella

In 1938, the museum's organizers wrote to Britain's Prime Minister, Neville Chamberlain, to ask if he would donate the world's most famous umbrella. This was the one he had just carried back from Munich, announcing "peace for our time" and inspiring a continental vogue by which an umbrella is still sometimes called a Chamberlain. The refusal from No. 10 Downing Street, suitably framed, is on display in Gignese to this day. Five cardinals of the Roman Catholic Church were more obliging and sent their umbrellas as well as their blessings.

In wet weather the Museo dell'Ombrello e del Parasole has been known to leak, and when the sun shines silk parasols deteriorate. Volunteer curator Bruna Giop does not know whether to pray for rain or shine. The museum has some 200 umbrellas and parasols on display, and 400 that could be shown if money could be found to repair them. It costs up to 2.5 million lire (or about $1,800) to restore a single antique specimen.

Michel de Montaigne, the 16th-century French essayist, complained of the sun's heat in Italy, yet rejected parasols because they were a "burden to the arm [more] than a protection to the head." But France's Louis XIII had no fewer than 11 taffeta sunshades of different colors, some trimmed with lace. In the 18th century, a company won monopoly rights to rent out

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Sony. More than just telephones—Conversation pieces.

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The King of Siam did himself proud, while keeping dry and cool, with a fancy multistoried umbrella-parasol.

parasols at each end of the Pont Neuf in Paris. For a few sous, fops not wanting to spoil their complexions could take possession of a parasol on the Rive Droite, sashay across the bridge to the Rive Gauche, and hand over the parasol. During the French Revolution, women eagerly paraded with both parasol and umbrella—to signify their equality with former nobles.

Robinson Crusoe sported his own all-weather model—covered, as Daniel Defoe wrote in Crusoe's diary, "with skins, the hair upwards, so that it cast off the rains like a penthouse, and kept off the sun." In France an umbrella became known as a Robinson, and for a time in the 19th century as a *pépin* (pip), from its association with pip-headed Louis Philippe, the citizen king who scorned crown and scepter in favor of silk hat and umbrella.

Despite Descartes and the Académie Française, in French *parasol* is "parasol," but so is *ombrelle*. An umbrella, logically enough, is a *parapluie*, *pluie* being rain. Belgium boasted a cotillion known as *la parapluiterie*, in which a woman with an umbrella presented it to the less fortunate of two gallants, and danced off with the other—while the loser tried to hold the damned umbrella over the pirouetting pair.

The English word "umbrella" comes from the Italian *ombrello*, itself an offshoot of *umbra*, Latin for "shade" or "shadow." In his famous *Dictionary of the English Language*, whose definition of "oats" (English horsefeed, Scottish breakfast food) we're always told about, Samuel Johnson conflated "parasol" and "umbrella," defining the latter as "a skreen used in hot countries to keep off the sun, and in others to bear off the rain." Sir Jonas Hanway (1712-1786) is credited with introducing the umbrella into England for everyday—well, almost everyday—personal use. Hanway's memorial in Westminster Abbey skirts scandalously close to impiety, paying tribute to his work for foundlings and prostitutes, but not to his *parapluie* pioneering. But then, when he first began carrying an umbrella, passers-by derided him as a "Frenchman," youngsters threw stones, and coachmen, seeing their livelihood endangered, eyed him balefully. And in fact, partly because it proclaimed that they did not own a carriage, English gentlemen were slow to take up the umbrella. In the 18th-century novel *Cranford*, Mrs. Elizabeth Gaskell's fictionalized story of her youth, the author recalls that when an umbrella was first sighted there, little boys called it "a stick in petticoats."

Soon, however, the umbrella began to be an emblem of British phlegm, or lack of it. British officers often carried it in battle, and that custom continued despite the disapproval of England's greatest soldier, Arthur Wellesley, the Duke of Wellington. During the Peninsular War in 1813, his officers were instructed that "Lord Wellington does not approve the use of umbrellas during the enemy's firing, and will not allow the Gentlemen's Sons to make themselves ridiculous in the eyes of the army." Wellington himself had an oiled-cotton umbrella with a concealed sword. Two years later, though, at Waterloo, French Marshal Nicolas Soult noted: "It was raining and the English officers were on horseback, each with an umbrella in hand, which seemed to me eminently ridiculous. All at once

The author has put umbrellas to the test in many lands and many languages. He wrote most recently in these pages about the Portland Vase restoration.

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Did the umbrella help the English beat the French at the Battle of Agincourt? Probably not. But some of the English officers did unnerve the French during the Napoleonic Wars by the remarkable aplomb with which they folded their *parapluies*—and attacked.

the English closed their umbrellas, hung them on their saddles, drew their sabres, and threw themselves upon our Chasseurs." *Punch* suggested that gallant English fighting men could stand fire, but not water. Umbrellas should be attached to their guns, the magazine puckishly suggested—one regiment would be called the "First Parapluies" and along with "Fix bayonets!" officers would be trained to order "Put up umbrellas!" And a martial song celebrating the brolly gone to war was suggested:

> What though the foes may fly,
> As they run we'll wing 'em,
> Conquer we, or bravely die:
> Unfurl, unfurl the gingham.

In 1978, a Bulgarian exile walking near London's Waterloo Bridge was done to death by poison from the tip of an assassin's umbrella. Four years ago the U.S. Army ruled *against* umbrellas for the Army's fighting man. Male Marines are also prohibited from using them but the Air Force remains tolerant. Two years ago, after a waterlogged eternity, the Navy ruled umbrellas permissible for the uniformed seaman, so long as the umbrellas were black and carried in the left hand—the better to salute with the right. In July 1987 Britain's Rear Adm. John Bell, retired, returning from a lecture on violence, fought off two muggers with thrusts of his umbrella. Fortunately for Bell, the Home Office had recently ruled that an umbrella was a legitimate weapon of self-defense.

In an 1801 edition of *Hints to the Bearers of Walking-Sticks and Umbrellas,* author J. S. Duncan divided bearers of umbrellas into "sky-strikers," who when opening the umbrella jerk it up, thus endangering the eyes of those nearby, and "mud-scoopers," who dash the umbrella to earth, impeding the footway.

One popular sunshade model of the French Directory style had a hinged shaft to allow protection when

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Brollies have been built to accommodate anything from a stovepipe hat to the bustle of a beautiful marquise.

the sun was low on the horizon. It later became known as a marquise, honoring the presumed inventor of the device, the Marquise de Pompadour. Umbrella patents began to appear in Britain at the end of the 18th century, and soon there were hundreds—covering everything from an umbrella holder for carriage or saddle to umbrellas that doubled as walking sticks to telescopic and automatic-opening umbrellas. One irrepressible tinkerer even developed a lightning-rod umbrella, with metal spike earthed by a wire attached to a metal ball.

Thanks in part to duty-free raw materials from British colonies, England produced cheap umbrellas—the cost was often less than a penny. In Charles Dickens' *Posthumous Papers of the Pickwick Club*, voters of Eatanswill were bribed with gifts to their wives of "five-and-forty green parasols, at seven and sixpence a-piece." Dickens also introduced Sarah Gamp, the nurse in *The Life and Adventures of Martin Chuzzlewit*, who kept her elaborate umbrella ostentatiously beside the fireplace—which is how "gamp" became shorthand for a large, often untidy, umbrella.

Robert Louis Stevenson claimed that an umbrella confers respectability, and it is true that among the first group to embrace the novelty were clergymen, whose attendance at funerals exposed them to inclemencies, and whose station shielded them from ridicule. One merchant featured the Clerical Umbrella—stout handle, serviceable alpaca, seemly black. Yet an umbrella plays fast and loose and adores promiscuity, going from hand to hand. It is the only mechanical instrument with a mind of its own, deciding to stay behind when its owner departs.

Edible brollies made of banana leaves

When Ralph Waldo Emerson's memory was failing, he forgot the word "umbrella." "I can't remember its name," he said, "but I can tell its history. Strangers take it away." Stevenson once left his own umbrella behind when he visited literary critic George Saintsbury, and eventually sent instructions to hand it over to Rudyard Kipling. When Stevenson died, Saintsbury discovered the umbrella had disappeared, and decided that it had flown to heaven and become a star of the first magnitude—"enskyed and constellated." Kipling was consoled when he saw and sketched Italian railroad workers in the snow, each shoveling away beneath an open umbrella whose handle was shoved down the back of his jacket.

Today, rural Bangladesh has the edible umbrella, made with banana leaves; the unwary owner who parks his brolly where a cow can get at it may as well wave goodbye.

The en-tout-cas (a French designation though it was invented in Britain), also known as the *paratout*, was midway between parasol and umbrella, plainer than the former, smaller than the latter, and ready for rain or shine. The parasol-whip—a driving whip with a parasol fixed halfway up the shaft—enjoyed brief vogue in the mid-19th century, as did the German-made umbrella with extended wing to shield milady's bustle. Another umbrella whistled as it unfurled. At the end of the 18th century, fashionable French sun-

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shades employed the latest materials and trimmings, and featured colors with such perplexing yet lively designations as "stifled sighs," "useless regrets," "goose dung," "king's eye," "dauphin's dirt" and "agitated nymph's thigh" (*cuisse de nymphe agitée*).

Umbrella and parasol handles are a whole art world unto themselves. They range from unadorned knobs to silver hooks to mounts of gold and ivory to heads of insects, seals, hares, owls, serpents, even babies. The handle might be a ticking watch or a poodle that, when a lever is pressed, sticks out its tongue. Egg maker Peter Carl Fabergé, court jeweler to the Czar of All the Russias, also made superb umbrella handles. One 1900 handle—not a Fabergé—was shaped as a person's head, with mouth open to accommodate a cigar and a pump to keep the cigar lighted. In 1911 along came memorial handles for American widows, featuring carved portraits of their departed husbands. A pepper-sprinkler handle was useful for stopping dog fights, the Pathfinder handle included a flashlight, and some handles unscrewed to reveal space for cigarettes, matches, coins, powder puffs, flasks of perfume, china or silver writing sets, opera glasses and the occasional stiletto. The racing model—still being manufactured—is equipped with a pencil for figuring the odds.

If you drop an umbrella, it is bad luck to pick it up yourself. If you open one on a nice sunny day, the action is said to bring rain. Umbrellas should not rest on beds or be opened indoors. The Thirteen Club used to meet for lunch when Friday fell on the 13th; they would spill salt, walk under ladders and most daring of all—sit indoors under opened umbrellas (SMITHSONIAN, February 1987).

Between the wars, the uniform of bowler-hatted London gentlemen, especially those who worked in the financial district, traditionally featured the tightly rolled black umbrella. When poet W. H. Auden was employed as a tutor, his failure to carry an umbrella so preoccupied his employer that the man posed Auden holding an outsize umbrella above his son, who was dressed as an Oriental potentate, and captioned the resulting photograph "His Tartaric Majesty and his Royal Umbrella Holder."

In the royal family, the umbrella had its ups and downs. After an attempt on Queen Victoria's life, one of her umbrellas was fitted with steel chain mail between cover and lining. When her great-grandson Edward VIII was caught on film leaving Buckingham Palace under an umbrella, Mrs. Simpson was asked to caution the king on being more "careful in future as to how he is photographed." Royal decorum has eased since then. Not long ago, when the British royals emerged from a Sandringham church into the rain, the Duke of Edinburgh, apparently to accommodate waiting photographers, ordered "Umbrellas down!" Only Queen Elizabeth obeyed.

London's Swaine Adeney Brigg & Sons, successor to Thomas Brigg's antiquarian establishment (founded in 1836), is umbrella maker to the Queen Mother, and whip and glove maker to Elizabeth. There was a time when meticulous umbrellarians who found themselves obliged to open their brollies in a downpour could drop in at Brigg's afterward to have their umbrellas ironed and rerolled. The shop still offers a printed guide to rolling the Brigg umbrella, as well as prescriptions for care and usage. Excerpt: "Never carry your Brigg umbrella at the long trail. It was designed to be carried by the handle. . . ." The company's umbrella woods include ash, chestnut, maple, hickory, cherry, congo, malacca and whangee. An ivory-handled black silk number with gold collar goes for £900 ($1,400), as does a model with a concealed 14½-inch Wilkinson sword blade, but sales of these brolly weapons are strictly regulated. "We used to have a good many customers from New York for the sword umbrella," a salesman reports, "lawyers, mostly."

In aroused or inspired hands the brolly has more visionary uses. Three years ago in Washington, D.C. the Physicians for Social Responsibility presented Congressmen with "Star War" umbrellas that had holes to let through the rain—a counterpart, they argued, to Star War defenses that would let a small percentage of enemy missiles get through. In the 14th and 15th centuries Italian mystery plays depicting the Great Flood presented the last word in artistic license: it was God who carried the umbrella.

Whoever invented the umbrella, any Briton will attest that he or she was a great benefactor of mankind.

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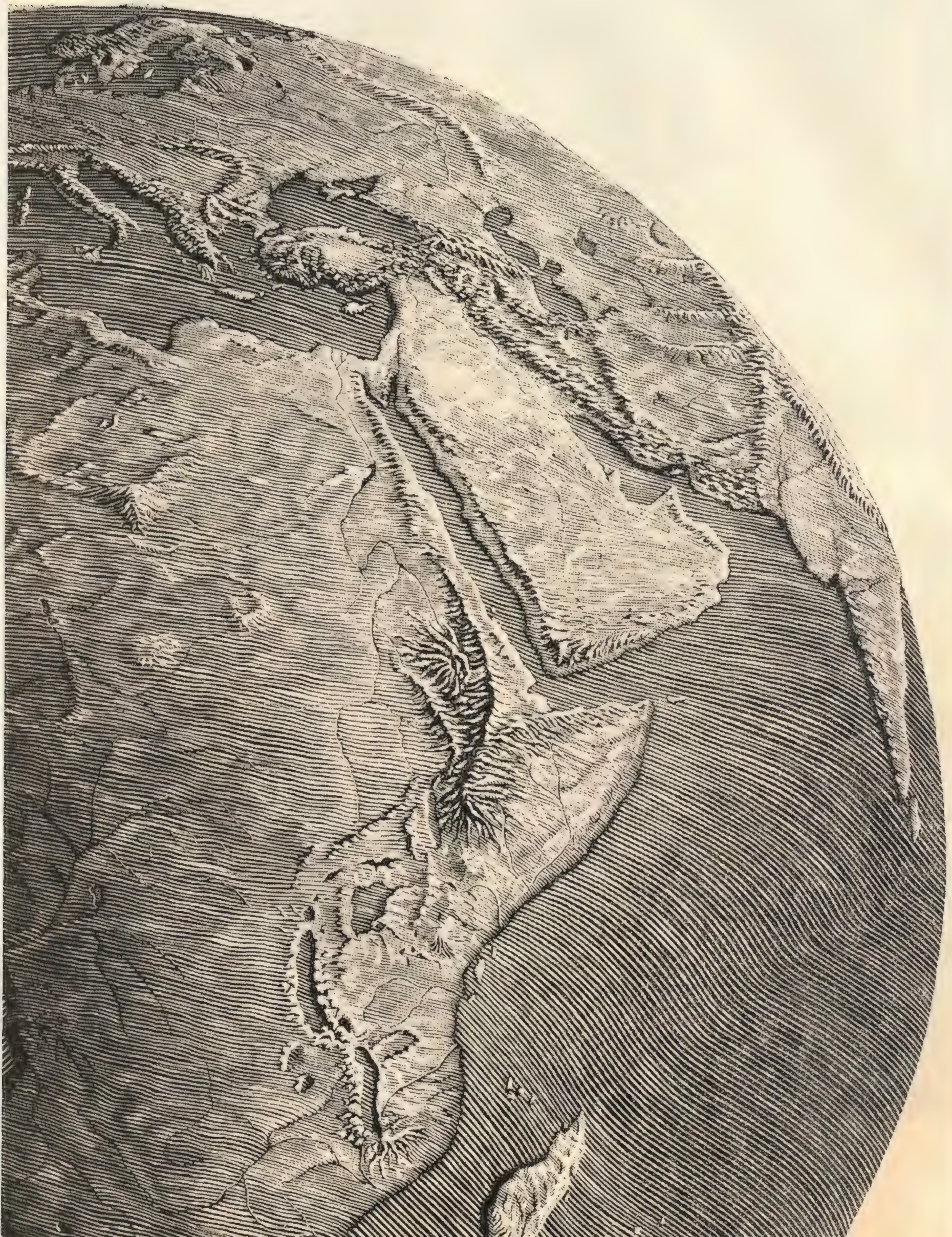

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By Douglas Preston

Building with mud signifies success in the Southwest

Indians started it all, the Spanish improved it (thanks to the Moors); now adobe is the darling of architects and the well-to-do

Built nearly a millennium apart, the Taos Pueblo (of which only a small part is shown opposite) and Frank Lloyd Wright's Pottery House (above) are considered triumphs of the art of building with mud.

When I first moved to Santa Fe, New Mexico, I called to take out an insurance policy on my valuables, such as they were. The agent wanted to know what my house was made of. I told him that the walls were stuccoed in cement, but that did not satisfy him: "It's what's underneath that counts," he said.

So I poked around and soon found a hole drilled through the wall to admit the telephone line. As I pulled on the wire I was surprised by the trickle of dust that came with it. I peered in with a flashlight and found that the entire wall seemed to be nothing but solid dirt from one side to the other.

That was when I found I was living in a mud house.

Many people would be shocked to make such a discovery, but I was rather pleased. After all, half a dozen movie stars now own mud houses in Santa Fe. D. H. Lawrence traded the original manuscript of *Sons and Lovers* for a bunch of mud buildings and some land. On a hill just behind my house sits a mud house designed by Frank Lloyd Wright that cost more than a million dollars to build. And when Nathaniel Owings of the New York architectural giant of Skidmore, Owings & Merrill, the firm that practically invented the glass skyscraper, designed his dream house in Jacona, New Mexico, he chose to build it with—mud.

No one calls it mud, of course; the correct term is "adobe." But let us be clear at the outset: traditional adobe is 100 percent mud, with nothing added (except, sometimes, a little chopped straw). In a traditional adobe house the walls are solid mud from one

Photographs by Chad Slattery

side to the other, from top to bottom, with no other structural support, timbers or framing. While today the adobe wall might be covered with a layer of insulation and a veneer of cement stucco, it is the dirt itself that holds up the roof.

More than a half-million people in the United States live in adobe houses, of which there are 59,000 in New Mexico alone. Most are concentrated in the Southwest and Southern California, wherever the sun shines most of the time.

Not so very long ago, adobe was a poor man's building material. When a man wanted a house, he simply dug up his yard, mixed the dirt with water, poured the mud into brick molds, dried them in the sun and built his walls. Trees, trimmed and peeled, would be laid across the tops of the walls, forming his roofbeams, or vigas. (The ends of these vigas, projecting from the outside walls, are what give the adobe house its most characteristic look.) Peeled limbs, called latillas, would be laced tightly together in a herringbone pattern on top of the vigas, forming the ceiling itself. Finally, a layer of the same mud, tossed on top, would seal it from the elements. A beehive-shaped fireplace with an arched opening (called a kiva fireplace) would be placed in the corner of each room.

Trini Velarde empties mixing machine into a holding box; front-end loader will carry mud to brick forms.

These basic elements still make up the traditional adobe house—only now they will cost you a small fortune. In the Southwest and Southern California, adobe has become the ultimate building material of the very sophisticated and the very rich. An adobe house on Acequia Madre in Santa Fe, originally built by a poor Hispanic laborer a century ago, could easily sell for a half-million dollars today. Even a new adobe house will cost you some 20-40 percent more than a similar one built of wood frame or block, because its construction is so labor-intensive.

The use of mud in new construction has undergone a revolution—lately it has been used for everything from low-income HUD housing to multimillion-dollar mansions—and in an energy-conscious age it has become the ideal material for a passive solar house. A generation of Southwest architects have been experimenting with adobe, creating houses that simply could not be made from any other material. To live in an adobe house instantly confers prestige; if, for example, a condo or subdivision in Albuquerque has one adobe brick in it, the developer's advertising will trumpet "adobe accents" in 32-point type.

Materials scientists: eat your hearts out

Why such latter-day prestige? Adobe possesses strange and wonderful qualities. When wet, it forms a thick, sensual mud that is easily shaped and molded; when dry, it becomes rock-hard and very nearly waterproof. An adobe house is a work of sculpture. Gone are the straight lines, flat surfaces and hard angles imposed by other building materials. Its irregular parapets, broken here and there by a softly rounded chimney mound, mimic the distant hills. Its walls curve and ripple, often sloping inward, sometimes buttressed at the corners by odd mounds. Since an adobe house is often built from the dirt it stands on, it becomes part of the landscape, rather than an imposition upon it. Finally, an adobe house is well adapted to the desert. The earthen walls absorb heat from the sun on the outside during the day, and then radiate it into the interior of the house at night.

But what is most remarkable about an adobe house is the way it *feels*. Unlike a frame house, which will

The Velarde sisters, 10-year-old Mandy, at left, and Ivy, 14, use hoes to pull mud (and a little chopped straw) into the forms.

Carmen Velarde, Trini's mother, puts finishing touches on one of her fireplaces.

vibrate and creak ever so slightly in the wind, even in a hurricane the adobe house remains absolutely rooted to the ground. Its massive walls deaden noise, creating a hushed, pervasive silence within the house. Its spare, whitewashed interior and deep window embrasures spread a cool, indirect light throughout. One woman told me: "I can't describe the feeling of peace, security and privacy I get from an adobe house. It's the way a house *ought* to feel but doesn't."

An adobe structure, if properly maintained, can last a very long time indeed. One of the oldest inhabited structures in the New World—the 900-year-old Taos Pueblo—is built entirely with adobe. The oldest government building in North America, the 380-year-old Palace of the Governors in Santa Fe, is also made with adobe. So are many of the oldest churches.

Adobe has been used in the Southwest for a thousand years or so, but it wasn't until the 12th and 13th centuries that the Pueblo Indians carried the technique to its florescence. Using nothing but mud or stone mortared with mud, they erected enormous structures with up to five stories and with as many as 2,500 rooms. Until the coming of the Spanish, the Indians built using puddled adobe—that is, the mud was scooped up by hand and packed into place on the wall. The Spanish, who first settled the Southwest in 1598, immediately adopted the native-American style of building, but added two improvements of their own. First, they brought the idea of the adobe brick—that is, the molding of wet mud into bricks that are left to dry in the sun, and then piled up with mud mortar. (It was an idea brought to them by the Moors, who themselves borrowed it from the Arabs. The word "adobe" most likely comes from the Arabic word *at-tub* or *al-tub*, meaning a sun-dried brick.) They also introduced the idea of the enclosed fireplace. This melding of ancient Pueblo architecture with Spanish improvements is what eventually resulted in the Pueblo Revival or Santa Fe Style of architecture so popular today.

When American settlers first came down the Santa Fe Trail, they were appalled at the idea of living in the low, irregular adobe houses they found. They made do as best they could by imitating, in mud, the homes they had left in the East. In doing so they created a new architectural style, the Territorial. The new settlers often replaced the traditional flat roof with a pitched roof complete with gables and dormers. They inserted homemade Greek Revival windows and doors into mud walls. Later, those who could afford it built entire

Douglas Preston, a recent arrival in the Southwest, is writing a book on someone who got there earlier: the Spanish explorer Francisco Vásquez de Coronado.

Immortalized in a Georgia O'Keeffe painting, the sanctuary at the back of the Church of San Francisco de Asis in Ranchos de Taos, New Mexico, has become one of the most popular motifs in Southwestern art.

Victorian mansions out of mud. Sometimes fake bricks or limestone blocks would be painted and scored onto an adobe facade; the Palace of the Governors once suffered this indignity. The Pinckney Tully house in Santa Fe, built in 1851, is another example. Here the owner went to great lengths to disguise the fact that the house was made of mud by painting fake bricks on top of the plastered exterior, even including fake keystone arches and lintels.

The old Spanish adobe remained out of favor among all but the poor until artists began arriving in Santa Fe and Taos in the 1910s and '20s. They immediately saw the virtues of adobe, and began renovating the large stock of existing houses as well as building their own. Later, architects discovered adobe's unique solar properties and its potential for unusual and whimsical designs. As adobe became more expensive to build with, it became more fashionable, and the rich began demanding it for themselves. Many of the million-dollar homes being built today in New Mexico have even gone back to such original details as natural mud-plastered walls and mud floors.

The greatest adobe buildings in the Southwest, however, are its early mission churches. Here, anonymous laborers in tiny mountain and desert towns created some of the most extraordinary examples of architecture in North America.

About four miles south of Taos, New Mexico, lies the village of Ranchos de Taos. In the center of the town plaza rises the Church of San Francisco de Asis, which many people consider the greatest example of adobe architecture in the United States.

Its origin is a mystery. It was most likely built by 19th-century Spanish settlers and Indians from the local pueblo, working together under the direction of an unknown priest—without benefit of an engineer, architect or perhaps even a drawing on paper. Oddly enough, it is the asymmetrical back of the church (above), rather than the front, that exhibits the ultimate triumph of adobe architecture. The back of the sanctuary is supported by an astonishingly massive adobe buttress, 20 feet thick and 17 feet wide. This buttress is, in turn, braced by a smaller, rounded buttress. The surface is plastered with natural mud mixed with straw, lovingly hand-polished with pieces of wet sheepskin. Not a window or trace of decoration breaks the

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Considerably more modest, and more recent, is the Sacred Heart of Jesus Church in Nambe, New Mexico.

pale, buckskin-colored banks of earth rising up against the intense blue of the New Mexico sky. The result is a structure of elemental power and dignity. That such a building sprang up, unremarked, in a small town at the barbaric fringe of the crumbling Spanish empire makes it even more astonishing.

Every year, before the summer rains come, the entire parish helps replaster the church with fresh mud. Almost everyone turns out, from 85-year-old grandmothers to 6-year-old children. I went up to Ranchos last June to offer my feeble skills to this communal effort, and was welcomed by the overseer, a dignified, sunburned man named Lalo Duran.

The day's work began with an early-morning mass ("to get the day started right," one old-timer explained). The mood was that of a fiesta, with children gleefully hoeing mud in troughs, women smoothing the walls with wet sheepskins, and men on scaffolds, troweling and slapping thick mud into place over the eroded plaster of last year. The overseer went around squinting at everyone's work, spotting invisible defects with a critical eye, shaking his head in mock disgust.

I started by mixing water and adobe soil in a trough with a hoe, and then graduated to smoothing the tapias—the adobe walls around the churchyard—with a wet piece of sheepskin. Lalo came over and showed me how to do it. "Work from the top down to get out the drips," he said, while the women giggled behind me. "Press hard and smooth over the cracks." He looked up at two teenagers on a scaffold, slopping mud plaster on a wall with push brooms. "That kind of work won't get you into heaven, my friends," he called up in Spanish.

The adobe industry in the United States is concentrated in New Mexico, Arizona and California. It can be divided into two groups: the old-time *adoberos*, who still make adobes in their backyards, and a handful of large-scale producers. Of the four million or so adobe bricks produced in New Mexico last year, close to two million were made by a half-dozen big producers and a similar quantity were made by scores of smallish producers. The rest were by do-it-yourselfers building their own houses.

Making adobes the old-fashioned way

I wanted to see how a traditional adobero worked, so I went up to Ranchos de Taos and paid a visit to Trini Velarde. The Velarde family has been living in Taos for centuries and probably making adobes for about that long (pp. 146, 147). Trini's place sits on a ridge with sweeping views of the Sangre de Cristo Mountains and the great Taos Plain. His machinery occupied most of the front yard: an old Chevy engine attached to an eight-yard mixer, several old car hulks cannibalized for parts, a front-end loader. At first, Trini didn't want to talk about himself; rather, he took out a sheaf of Polaroids showing the fireplaces his mother had built. Carmen Velarde is one of northern New Mexico's most famous fireplace builders. Traditionally, among both the Indians and the Spanish, the women were in charge of all the plastering, finishing work and fireplace building in an adobe house. A kiva fireplace is a work of art in and of itself. To build a good one—that draws well and looks right—takes enormous skill, as it must be a seamless marriage of engineering and art.

Trini's operation is small by most standards. He has made as many as 40,000 bricks in a good year, but last year, because of heavy summer rains, he was able to turn out only 20,000. He begins making adobes as soon as the hard frosts end, usually the last week of April, and continues through the middle of September. He does all the work himself, with a little help from his two daughters. "I had some guys come in and work for me once," he said, chuckling. "But they thought it was too hard."

The best adobe consists of earth that is a mixture of sand, clay, silt and small amounts of calcium carbonate. Often all the ingredients can be found in the same

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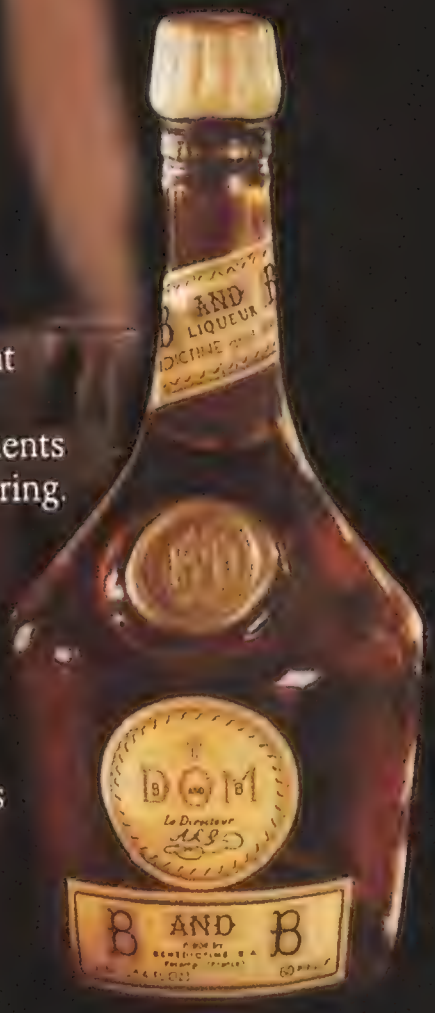

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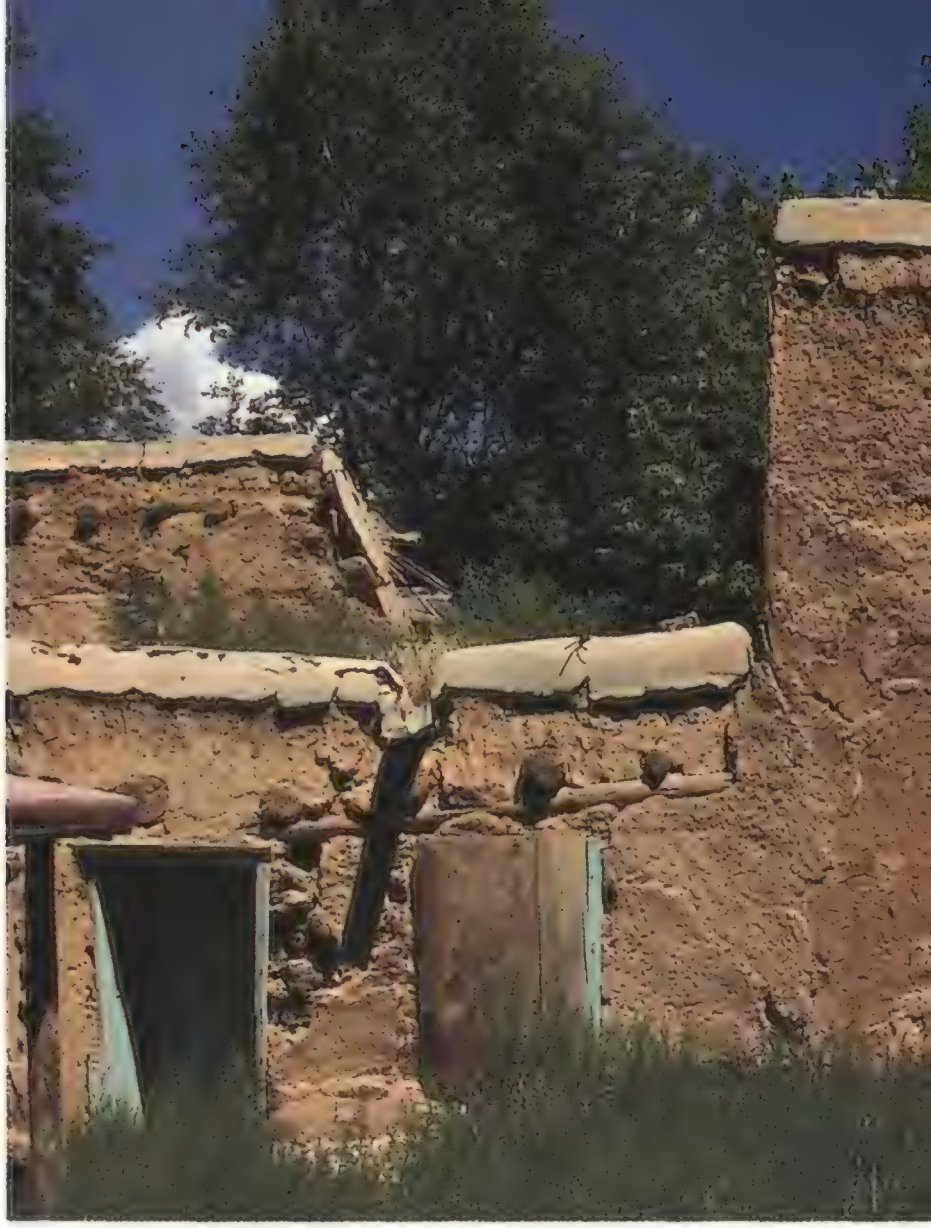


dirt. From an egg farm down the road, Trini obtains a whitish soil called caliche, which contains nearly everything necessary for good adobe. "I just have to add a little sand," he says.

The actual process is simple. Trini loads caliche and sand into the mixer, adds water and chopped straw (the straw is believed to help prevent cracking during the curing) and fires up the engine. When the mud is well mixed, Trini pours it into wooden forms laid out in his yard. If it has been a sunny day, the forms can be slipped off in a few hours. After more curing the adobes are stood upright and trimmed. In another two or three days they are hard enough to be sold—for about 25 cents apiece if you pick them up yourself (35 cents delivered).

Adobe producers are as dependent on the weather as farmers, only they pray for sun. A good adobero can time his production to minimize damage that can occur if the bricks get rained on before they are fully dry. Trini rarely loses adobes to rain: "I know in my bones whether it's going to rain or not," he said. "They ache."

Despite great technological advances in construction, no one has yet been able to improve much on the traditional methods. The revival of interest in mud building thus created a demand for many traditional skills that had nearly become extinct.

Anita Rodriguez of Taos is someone who has done much to preserve the skills. She is an *enjarradora*, a traditional Hispanic woman "mudder," or plasterer. "All women plastered," she said. "It was part of your repertoire of domestic skills. When the Americans conquered the Southwest, construction became a man's business and women were excluded."

In the late '60s, Anita realized that the technology was dying out and she began to work on preserving the ancient techniques, passing along her knowledge to other Hispanic women. "I'm a feminist, and this was an opportunity to point out some historical realities: in our culture, women always played a crucial role in building houses and churches."

Even the high-volume adobe manufacturers use the same basic methods as the backyard adobero, only on a bigger scale with heavier machinery. The largest producer in New Mexico—and the second largest in the United States—is New Mexico Earth, in Albuquerque, which turns out between a half-million and a million adobes per year.

I dropped by the New Mexico Earth operation to meet the owner and founder, Richard Levine. I found him in his (adobe) office wearing a blue sweatshirt, a wool cap and (naturally) quite dirty jeans. A dozen or more parakeets and finches flew about in a large clerestory above us. A scattering of mismatched furniture and a hanging piece of macramé gave the place the air of a 1960s crash pad. Levine, whose former occupation was library director, decided that a sedentary life was not for him and founded New Mexico Earth in 1972.

Levine works much as Velarde does: with a pug mill, a front-end loader and wooden molds. He supplied adobes for restoration of the ruins at the Pecos National Monument and has sent adobes as far away as Washington, D.C. for a Smithsonian exhibit that involved setting up an adobe building on the Mall.

Like Velarde, Levine watches the weather. Unfortu-

Architect Jeremiah Iowa, a leader in new approaches to adobe, also works for old-building preservation.

The price of poor maintenance is being paid by this building on the town plaza of Ranchos de Taos.

nately he lacks bones that ache before a storm, so he keeps his radio tuned to the local weather station. "Last summer," he complained, "we lost thousands of adobes due to inaccurate weather reports. You'll get through one day of rain and make it, and then you wake up in the morning and hear a thunderclap and get a downpour and in 15 minutes it's all over. All your adobes look like brownies soaked in coffee."

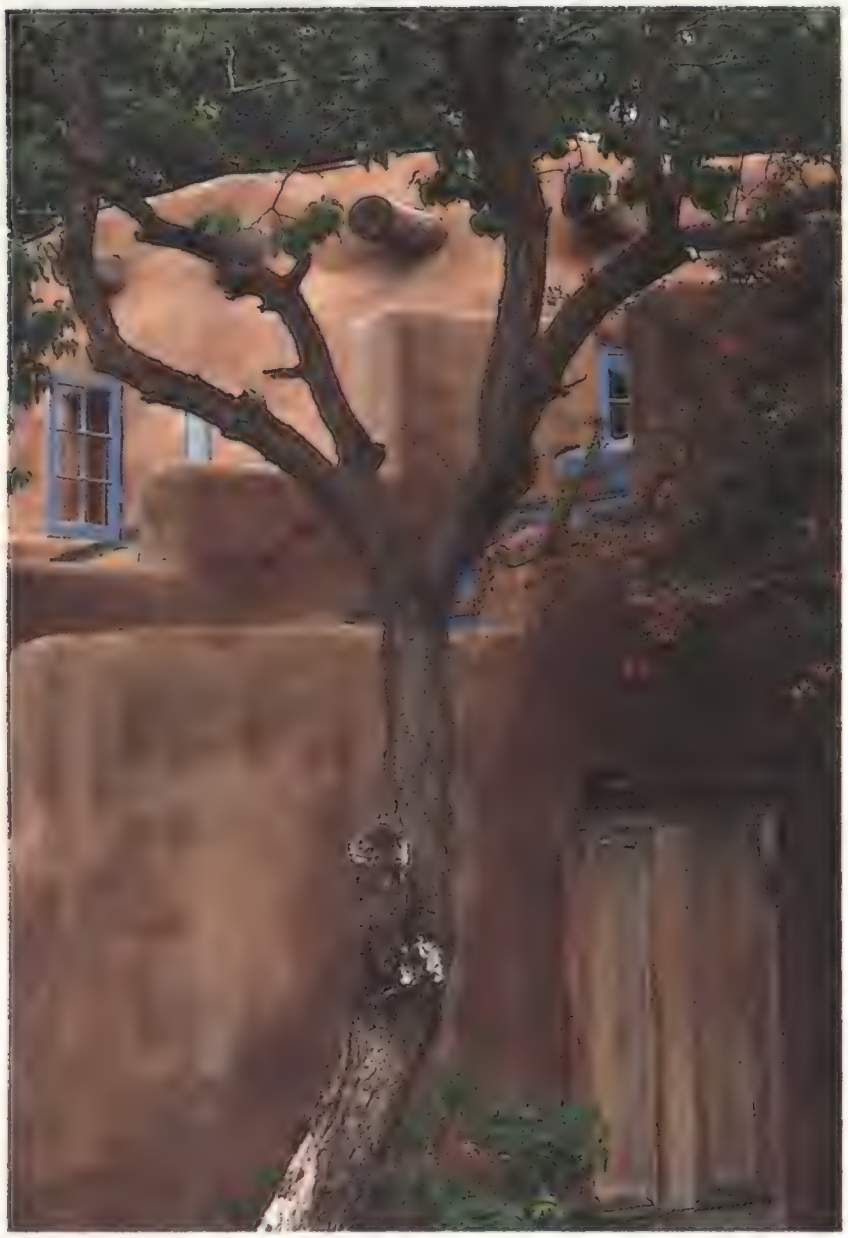
The cost of building with mud has soared. On the other hand, if you do it yourself, an adobe house can be dirt cheap. You can dig the soil in your yard and make your own bricks. For a few dollars you can get a permit to cut your vigas and latillas in the national forest. In short, you can build an extremely valuable house for next to nothing if you are willing to suffer months of backbreaking, muddy labor (a standard adobe brick weighs 30 pounds).

My friend Eli Levin is a typical example of the do-it-yourself builder. He lives in a rambling house built largely by himself and his friends in a process of accretion over the past 15 years. Eli, an artist, bought the original house, a condemned, two-room structure, in 1971 for $2,500. In the next few years, although he knew nothing about building, he put on several additions. Adobe is a very forgiving material, and thus an ideal medium for the clumsy and ignorant. Even the worst mistakes can be made to look "artistic" and the average person can acquire the necessary skills as he or she builds.

It was Eli's studio, built in the true Santa Fe spirit, that would later become famous. Because he needed a large studio space, he decided to build a tower out of adobe. In the time-honored fashion, he started by digging up his front yard.

"We made a few adobes," he recalled, "and they didn't fall apart, so we just assumed the soil was good." He and his friends dug a long trench in the front yard, which became the adobe mud pit. Making the adobes was a simple procedure: they would add water to the pit, dig out the right amount of soil, and mix the two by stomping around in bare feet—the method favored by traditional adoberos. When the bricks were dry, they were laid in courses in the wall, using fresh mud as mortar.

More than 5,000 adobes went into the tower, enough to build a medium-sized house. Some 2,000 came out of the front yard and another 3,000 from old ruined walls on the outskirts of town. Gradually the tower took shape. The outside walls were supported with strangely shaped buttresses more than three feet thick. Eli built a curved adobe staircase along the inside wall, within which was entombed a late, beloved cat. Then he hired some hippies to plaster the interior. "They wanted to use trowels but I wouldn't let them," he said. "As a



The Santa Fe home of Eli Levin has grown like Topsy over the years, on a learn-as-you-go building plan.

result they had to plaster by hand and the walls ended up nice and uneven."

The studio is now famous among locals for its rippled, organic walls, its crazy adobe fireplaces, and the marvelous curved staircase (opposite). Eli turned the much-reduced front yard into a sunken garden and planted it with fruit trees.

In the past 30 years, architects, builders and designers have been experimenting with adobe and putting it to new uses. In the late '40s in Santa Fe, a brilliant architect named William Lumpkins first combined adobe with passive solar design. Since then many people have recognized the value of combining high-mass adobe walls and their superb heat-storage qualities with solar design, particularly the use of large, south-facing expanses of glass and Trombe walls that absorb heat. Other architects have played around with adobe's sculptural properties, using the medium to create houses that depart radically from traditional styles.

One of the earliest experiments in unusual adobe design is the Frank Lloyd Wright Pottery House. Wright drew up the plans for a client in El Paso, Texas, between 1939 and 1942, but World War II and then the death of his client prevented it from being built. Several years ago a Santa Fe developer bought the designs from the Frank Lloyd Wright Foundation and built the house, with some modifications, high in the Santa Fe foothills (p. 145). It was completed in 1984.

Wright took full advantage of adobe's sculptural properties. The outside walls of the house are shaped like the two intersecting hemispheres of a pot. The windows are arched, curved and ovoid in shape, sculpted into the thick adobe walls, their shapes reflecting the hills and mountains beyond. Sculpted adobe buttresses, reminiscent of those at the Ranchos church, support the walls. Every surface curves and swells, and even the main fireplace is bowl-shaped. The house is so perfectly adapted to the medium that it is impossible to imagine it being successfully constructed of any other material.

Other architects have combined adobe with the natural landscape to create startling effects. Charles Johnson designed a house in Scottsdale, Arizona, amid a pile of granite boulders; the rocks themselves became part of the walls, floors and ceilings, intersected by sensuous, curving adobe walls. Others, notably Jeremiah Iowa of Santa Fe, have combined ancient architectural motifs from prehistoric pueblos with 19th-century folk-building and contemporary solar design; Iowa has even added such touches as glossy black lacquer and polished stone to his designs, creating striking contrasts between the old and the new.

In many ways Iowa is typical of a new generation of architects working with adobe. He began his architectural career on the Hopi Reservation, where he spent a year and a half on Third Mesa designing a prototype HUD house that would be culturally acceptable to the Hopi. (They had rejected the standard HUD homes, which were laughably unsuited to their climate and culture.) He later incorporated many of these elements into private houses as well as buildings he designed for various Indian tribes. In doing so, he has developed a philosophy that is typical of those working with adobe.

"If you can take what's in your backyard—stone, mud, whatever—and turn it into a wall," he said, "that's better than buying lumber milled in British Columbia and insulation from North Carolina. We've realized once again that we live in a world of limited resources. To make something out of the earth reminds us that we live on, and are of, the earth."

Levin sits on the curved stairway, which is inlaid with wooden treads, leading to the loft in his tower studio.

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M A C H I N E J A G U A R

6
2

By John Neary

The ex-hustler whose pool cues are a fine art

Bill Stroud's elegant cue sticks are made by hand and computer for top players, and he'd like to hang them in a gallery

Inside his workshop, adjacent to his starkly modern house on a hillside in Colorado Springs, Bill Stroud is eavesdropping on a nearly silent, urgently staccato early-morning conversation.

His Macintosh computer is talking to the automated controls of his industrial milling machine, discussing in machinese some intricate inlay work on the butt of a pool cue Stroud is making for a customer. Stroud is standing by to make sure the machines get it right.

Inside the Mac, Stroud has programmed instructions for how the milling machine is to go about cutting the slots for more than 1,000 inlay patterns that he has designed. Electronic pulses from one of these programs are now directing the Summit machine controller mounted atop the milling machine. In response to the commands from the Mac, the control unit directs the milling machine's tiny router bit to drop, and as it does, the bit begins chewing into the tapered cylinder of ebony clamped onto its work stand.

Then, as Stroud watches, the tiny blade, whirling at 25,000 revolutions per minute, begins cutting a one-half-inch-long slot, exactly one hundred-thousandth of an inch deep and 32-thousandths of an inch wide. Next, as Stroud waits, the blade retracts, the machine obediently rotates the ebony cylinder precisely 90 degrees and the blade cuts another, identical, slot.

Just about every morning, Stroud steps onto the Pirelli rubber-tiled floor of his shop and seeks to achieve perfection in the three or four cue sticks he produces each week for his customers. A good cue, he says, "must have a solid feel to it. A cue with a rattle or a click or a vibration or a clink will not be solid-feeling—and they're about 80 percent of the cues in the world. You can look at a cue and tell it's poorly made—but not whether it will play well. Not until you play with it can you tell if it's a piece of wood or a cue. I expect all my stuff to be perfect."

Stroud's sticks are magnificent weapons, magical scepters with exotic hardwoods so highly polished the grains seem infinitely deep, the way some marble is deep; flawless joinery that would do credit to a harpsichord; inlays as filigreed as a Turkish rug, as finely fitted as the tilework on a Pompeian floor or a mosque wall. And still he tests them, despite their stereognostic beauty, ruthlessly.

Inside the Bowl-Mor Lanes not far from his home, Stroud sets his brand-new box of brilliantly colored Super Crystalate balls down on the table and scatters them, a bright spatter of red, green, brown, yellow, blue, across the green felt. He parks the box under the table along with his cellular phone—ever handy to receive orders from his worldwide clientele—and screws together a brand-new cue, one he made for himself. He is trying his hand at snooker—a close relative of pool. He strides around the table with quick, purposeful steps. He quickly lines up his shots, his elbow motionless, a steady fulcrum for his pistonlike wrist, his grip on the butt of the cue far back on the linen wrap. His stroke is sharp and smooth, the cue gliding across the open bridge between his left thumb and the knuckle of his index finger.

"I'm on a different planet"

But he misses. Again and again, he misses. He's been so absorbed in the art and science of cue making that he has not shot billiards or pool for nearly a year. Used to testing cues on his living room rug, Stroud has gotten rusty. "That's just the way the balls are going to go, I guess," he says. "It'll take me hours to get to where I can make a few balls. I'm on a different planet. But this cue feels great!"

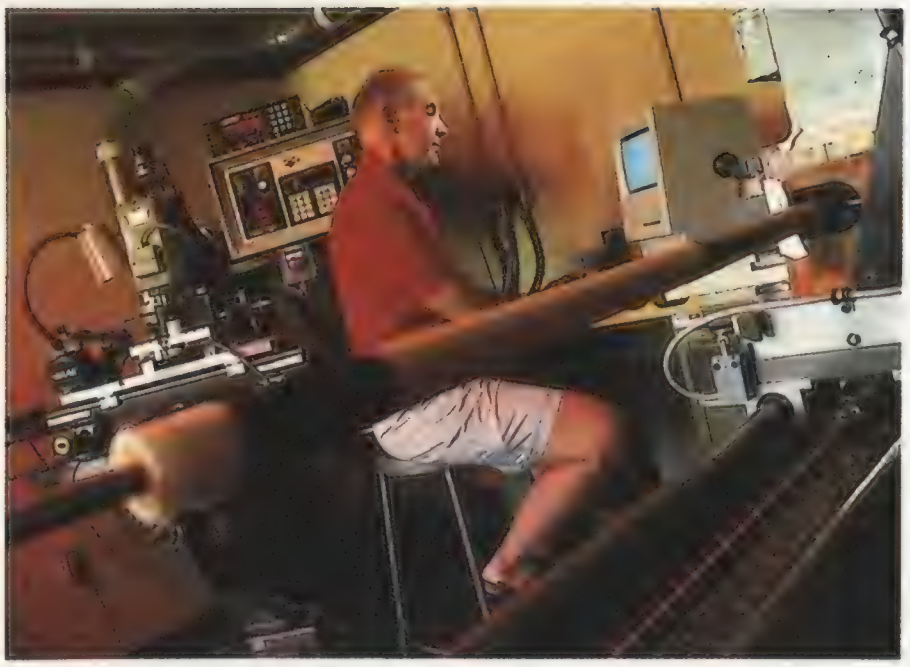
How does he know?

"I put on the shaft and listened for the sound. I heard and felt the feel." Just to be sure, Stroud picks up a pool ball, slightly larger and heavier than the snooker balls, changes shafts and takes another stroke. "There was a cold click," he says approvingly; "it could have had too much vibration."

Stroud will use this new beauty in an upcoming

Stroud plays with one of his cues in this photomontage, "not in the physical world, but in the mind's eye."

Photographs by Yoav Levy



Seated at his computer, Stroud works out inlay design as butt of a cue turns on lathe (foreground).

Working at lathe, Stroud stains piece of maple. At his right is another lathe; at his left, a large bandsaw.

gathering of snooker enthusiasts and then sell it. The stick, masterpiece of the cuemaker's art that it is, will go for around $5,000.

All of Stroud's cues can be used in either billiards or pool, the two similar but devilishly different forms of this peculiarly addictive self-torture that began to be played, some historians believe, as Paille Maille around the year 1250. Carom billiards, or just plain billiards, as it is usually called, is an utterly useless and intoxicatingly difficult branch of the game, demanding complex mental trigonometry as the cue stick is used to bank a cue ball off three or more cushions (sides of the table) and hit two object balls in varying sequences. Pocket billiards, or pool, so called for the halls where players pooled money for the stakes, is the other branch, an equally beguiling and mysteriously satisfying endeavor involving multicolored smaller balls and a cue stick. In pool, you win by knocking the cue ball into object balls and making them fall into pockets, positioned in the corners and midway down the two long sides of the table. Variations of the two games are myriad, as diverse as the mind's capacity to torture itself with challenging problems in spherical trigonometry, geometry, psychology and Zen. So much Zen, in fact, that the late Zen scholar Alan Watts once called the game "Zilliards."

Billiards and pool have had their periods of flood and ebb in popularity, but all the while, oddly, remaining steady favorites at both poles of the social spectrum. In the United States, blue-collar bars and Ivy League game rooms as well have always had tables. In the middle reaches of society, however, the games have only recently begun a major comeback. In Manhattan in the '60s, poolrooms abounded, including such temples of the sport as McGirr's, where one could behold the likes of Henry Ringling North, resplendent in his double-breasted pinstripes, taking his personal cue from the counter attendant—who would whisper, awed, "He owns the circus!" as North strode to his luncheon billiard table, where ancient black women with the dignity of members of Parliament were placing the balls for his billiard match. But just a few years ago, McGirr's was padlocked and scarcely a table was to be found in the Big Apple. The sport of billiards seemed almost dead.

Today, however, the game is once again zooming back, enormously popular in Japan and in Manhattan, too, as yuppies crowd into restaurants with as many as 30 tables, to pay upwards of $10 an hour to play against their dates at billiards, old-fashioned straight pool or even some Nine Ball, formerly a ghetto gambling game but more recently made popular by the movie *The Color of Money.*

Nobody is happier about the resurgence, or has devoted more effort and thought to billiards and pool than cue maker Bill Stroud, who has given most of his 48 years to the sport.

"I don't allow myself to make any mistakes," Stroud

John Neary is a freelance journalist and iron bodger who makes his home in New Mexico. He last wrote on the VLA space telescope in the July 1978 issue.

says. "No room for error. If you make an error, you just have to chop it up. I won't send out anything that's less than perfect." Stroud jokes about keeping friends in firewood with the lumber he buys and later rejects as unacceptable—90 percent of what he buys, he estimates. His wife, Barbara, says she uses the cue shafts he turns and then rejects for tomato stakes.

"I want my cues to look machine perfect—but to take a lot of handwork. My computer helps. It can do a multitude of final designs. I work fast, and I work pretty efficiently," says Stroud, "and think about how to be more efficient. You've only got so much time, and you might as well make use of it. It's like trying to paint: you look at a blank canvas and paint something. Instead, I look at a blank cue stick. I've got designs I don't have customers for, yet, in my head."

It cannot be proved beyond a doubt, of course, that the cunning and complex inlays with which Stroud adorns his cues actually help win games, but many of his customers feel the ornamentation is worth the cost. Stroud's plainest models sell for about $1,000; his most complicated designs, inlaid in the costliest woods, can push the price of a cue to more than $5,000.

Working on a small piece of inlay, Stroud says admiringly, "When this cue is done, it will be an absolute knockout from afar. When you walk into a poolroom, it will be the only cue you see."

In the world of the hustler, where the pro's livelihood depends on suckering an unwary mark into thinking he can win—and a cardinal rule is thus never to reveal your true speed—having such an ornate cue would be a dead giveaway, alerting an opponent that he was up against a serious adversary. "When I was hustling pool," Stroud says, "it was not common to have your own cue. You wouldn't carry it in. That would immediately identify you as a hustler." However, he admits, once in a while he would have trouble beating someone with a house stick, "so I'd go out and get my own stick—and beat the guy's brains out."

The difference is almost metaphysical

And therein lies the essence of the appeal of owning an Excalibur of a cue, the reason why professionals insist on their very own top-quality, custom-crafted stick. Says Stroud, "Having your own cue and playing with it constantly adds 20 percent to your ability—and a tenth is enough to win at the top. The stick makes so much difference, it's almost metaphysical. Basically, when you play pool, you're not really playing in the physical world. You play in your mind's eye. Everything's easy. You *think* it, and it appears. That's what I miss about shooting pool. When you play at a high level, everybody is playing with the same ability. So, you have to make yourself *rise above* that ability. Pool games are seldom lost. They are more often won. You have to play above your ability to win. You just have to figure out the tricks that get you above yourself."

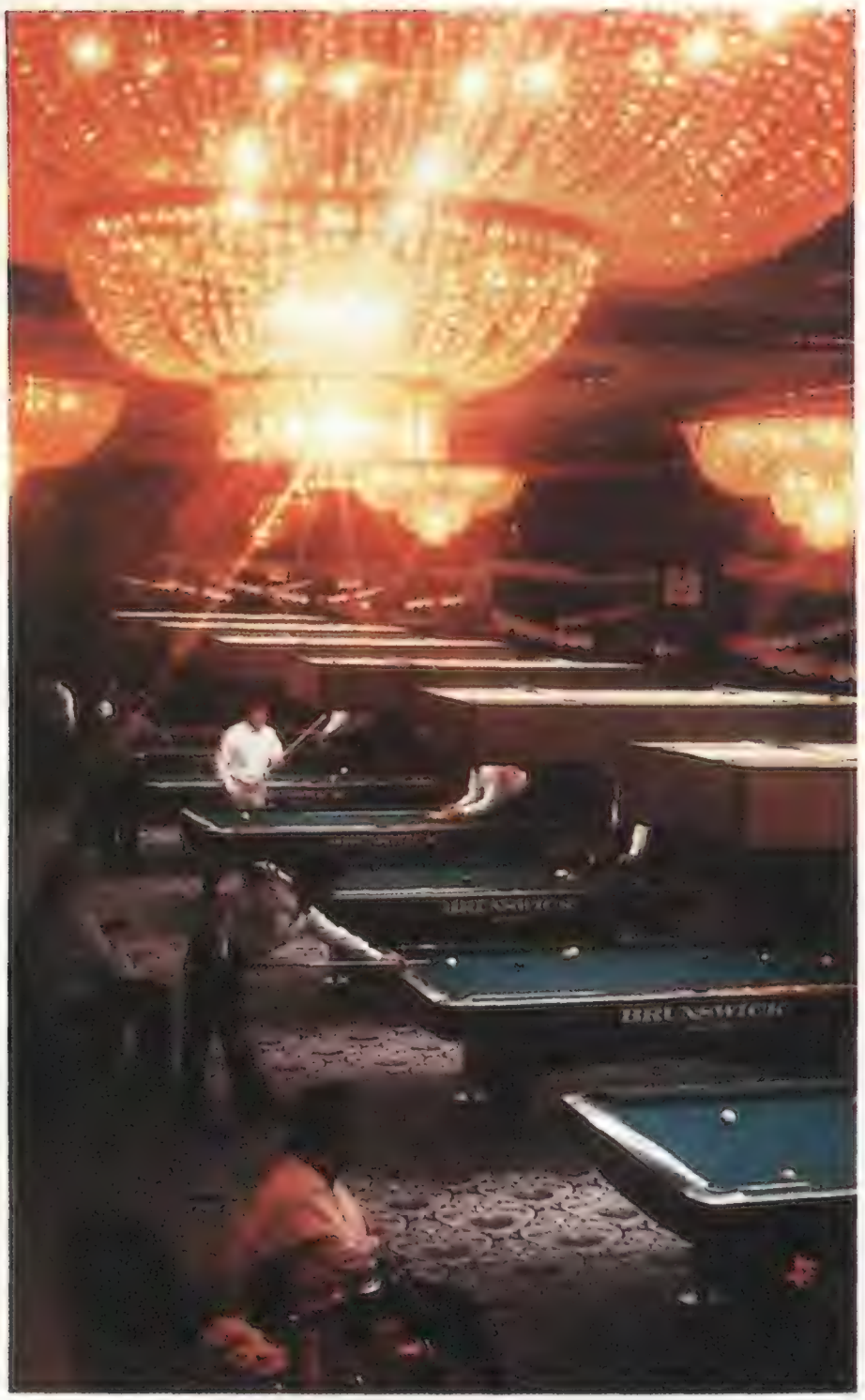
The best place to learn those self-levitational psychic skills, Stroud says, was in a now virtually vanished world, the serendipitous, smoky arena of the gypsy pool hustler, dramatized by Walter Tevis in his novels *The Hustler* and *The Color of Money*, both of which became movies starring Paul Newman as that quintessential hustler, "Fast Eddie" Felson.

"Things are different now," Stroud says. "People don't travel on the road as much. Then, you could stay in Holiday Inns for $8, $10 a day. I never went home. That's where everybody did their apprenticeship, on the road. It made you tough, hard, made you jump up and start playing well right from the first shot. That world's almost gone."

Stroud grew up in Missouri, with a couple of years in California when his father gave up farming to try selling real estate. His mother died when he was 11, and at age 14, Stroud went to Dallas to live with his

Stroud fits mother-of-pearl inlays into hollows on cue. On table, assortment box holds others he's made.

The art of the well-turned pool cue



At a recent tournament in Phoenix, Bill Stroud was so fixed on the game he never saw the chandeliers.

sister, who worked at Southern Methodist University. He had already contracted a ferocious addiction to pool, bitten by it first, he recalls, when he was given a carom board "with net pockets, and red and green rings that you flicked with a finger." Later, he remembers, "my uncle gave me a fold-up pool table, made out of Masonite. We didn't have much money, so my mother put green corduroy on it, and I saved up $17 and got some balls from Kansas City."

But it was not until he went to Dallas, Stroud says, that his yen for the game blossomed. "That's where I learned to play pool," he says. "I had access to the student center at SMU, and I was in there from 8 in the morning until they closed at midnight. I got a couple of books, including Willie Mosconi's classic on technique, and in a year and a half I was a very good player." Stroud had become so good, in fact, that after he trounced one astonished friend, the friend summoned his brother to come over from Houston to watch Stroud play. And when he did, the brother invited Stroud to Dallas, where he put up the stakes for Stroud to play a friend named Charlie at some Nine Ball.

"I won my first $500 bill from Charlie, and my first $1,000 bill," Stroud recalls. "I cannot imagine in a million years what he must have thought, seeing this young kid of 16, with his little $14 Willie Hoppie cue and his $7 case. I still remember the first ball I shot, and some of his shots. Charlie knew the table so well that he could shoot from anywhere. But he got weaker and weaker and weaker. When you start to beat people, you beat them down mentally. Something in their eyes shows you've had an impact. And then, all those free shots look like Mount Everest to them—and at that point, they're hurting and you can do anything you want with them."

The business world is less clear

With that taste of life on the road, Stroud took off. "I traveled all over the country. I've been in about every city of over 200 population. By the time I left Dallas, I was playing $1,500 a game. It makes you nervous, but you learn to control your emotions. It was nothing to carry five, six thousand dollars. It's your stock in trade: they're not going to take a cashier's check or your IOU. If you get beat, it is *so* hard.

"That's one of the things I liked about pool. It's very easy to figure out where you were at in life. You'd get up, shower, brush your hair and count your money. If you had $3,000, that was it. When you got back to the room, if you had $3,010, it was a good day. If you had $4,000, it was a real good day. But if you had less than $3,000, it was a real *bad* day. You get into the business world, it's less clear.

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In gorilla garb, this player is mascot of a Phoenix basketball team; table make, says Stroud, is best ever.

Stroud watches table after making left-handed shot at tournament, with new cue he was still getting used to.

"In pool, your fear of losing supercedes the circumstances. I couldn't bear it. I can't bear it today. That's what makes you get out there and win. It's what you do: you win. Losing is what everybody else does. Money is just the way you keep score. You start out thinking, 'I'm playing for a thousand!' But after you play for five hours, it becomes a formality.

"There's a lot of intensity around a pool table. It has to do with the scale of the game. Tennis, you can't get your mind around it. But pocket billiards is on a scale where your mind encompasses the whole thing. You can see every hair coming off the felt, every speck on the balls. You play in your mind. If you can think in those terms, it doesn't really matter what conditions you play in. I've played for big money on bar tables in San Francisco, where the only light was one little incandescent and you had to take and move it!

"On the road was one giant, long vacation, one big pleasure trip," Stroud says.

"Mountain got mad the other night"

In Baltimore, he met another hustler, Danny Janes, and the two headed South. In a small town in North Carolina, Stroud recalls, they met a man named Mountain. "We got into the town square, pulled in and parked. It was a typical Southern-style poolroom, a little bitty counter, a Coke machine, a pie-tin ceiling, a crumbly cement floor. I walked in and stalled around a little bit. I walked over by the cash register and saw that the window was broken, taped back together. You've got to start somewhere, so I said, 'What happened to the window?' and the guy says, 'Mountain got mad the other night and picked up the cash register and threw it through the window.' I asked if Mountain would come around, and the guy says, 'You want to play some pool? I'll call him up!'

"Twenty minutes later, Mountain comes in, real thin, with big ears, with a baseball uniform on. We started playing $30 Nine Ball. He went down under the counter and brought out his cue, with floral carving, a weak-looking brass joint. I beat him a couple of games. At one point he missed on the nine ball, down in the corner. He took his cue and tried to stab it. After I shot the nine ball in, he took it and threw it on the floor! It went all the way up to the ceiling! Twenty-five feet! I look up at the ceiling: dents all over the place. Finally, I got him stuck about $330, and he bounced the nine ball again—and let it hit him on the head. He quit. I was all dirty and decided to wash up. I got to the corner, when Danny yelled, 'Billy, look out!' I hit the deck and here comes the nine—not at me, but at the Coke sign, 30 feet away! I like having characters around. But they seem to have vanished from America. Since then, I've sold Mountain a couple of cue sticks."

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The art of the well-turned pool cue

Exciting, fascinating as his life on the road was, Stroud began in the late 1960s to feel dissatisfied with hustling. "I was 18, 19, 20," he says, "and I saw old hustlers, people who'd made their lives hustling, and I just kind of looked at them and decided that wasn't the way I wanted to end my life. I might have been making $90,000—but my expenses were running $50,000 or $60,000. I'd never make enough money to live the kind of lifestyle I wanted. Somewhere between Lincolnton, North Carolina, and Duncan, Danny and I decided we were going to make cue sticks.

"I had always been interested in cues. Dan and I talked it over and saw there was a niche in the market and a chance to fill it. We went into business in 1968. I'd never taken shop, never been near a lathe. Danny had done some things. We bought a lathe for $495, and got a bandsaw from a friend, and a grinder. The bandsaw had been used for meat. We bought a table saw for $185 and a mini-drill press for $50, and we set up in a deserted crab house in Baltimore. The first cue that Danny and I made just got thinner and thinner and thinner, and we finally had to throw it in the trash. But the second one we sold, for $85."

In building cues, Stroud says, "you have to understand the mentality of the pool player. You get attached to your stick. I literally slept with mine. It went into the bathroom with me when I went to the bathroom." Anything on the stick that would interrupt the shooter's concentration must be eliminated, especially visual distractions on the shaft. "I'd like to have a piece of ash that grows perfectly straight and clear," Stroud says wistfully, "but it doesn't grow that way." Instead, therefore, he uses Canadian maple for his shafts. He is meticulous about the taper, or lack of taper, he gives them. A good pool cue, he says, comes straight back for at least the first ten inches so it won't cause your fingers to spread as it glides through your bridge on the stroke, throwing off your aim and shattering your concentration. "The best cues are made out of wood that's totally relaxed. If the tree grows on a hillside, it'll grow at a different rate on each side and that creates a lot of tension. A lot of cue makers don't have a chance to let their cues sit around and relax. The essence of a good cue, to me, the primary thing, is the way it plays. Some cues feel lively, some cues feel dead, like you're playing with an inert piece of material. I remember once, in Johnson City, some guy brought out a fiberglass cue. It seemed like a fabulous concept—but you couldn't move the cue ball with it."

Paul Newman was "Fast Eddie" Felson, Jackie Gleason portrayed Minnesota Fats in 1961 film *The Hustler.*

When work is a problem, he plays golf

Stroud has experimented with materials like graphite and boron fiber, but currently makes his cue sticks only from wood, investing about 25 hours of work in each one. "There are hundreds of separate steps," he says. He works in daily increments, striving always toward a perfect cue, finding each component task every bit as absorbing and intense as playing at the pool table. Whenever the work becomes a problem, he says, he breaks and goes off to play golf.

"First," Stroud says, "you have to rip the lumber. Then it has to be cut to length. Then it is turned." Stroud uses a $27,000 wood-and-metal-turning lathe to work his shafts into shape because it affords greater control over the cutting than most woodworking lathes. He spins the shafts at the excruciatingly slow

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speed of 300 rpm, taking off only a minute ten-thousandth of an inch at each pass to keep vibration to a minimum and thus maximize the symmetry of the shafts. "If they aren't suitable, into the trash. I let my shafts sit a week, then I'll put them back on and taper them five or six more times." After every session of turning, he seals the shaft's newly raw surface, "to slow down the atmosphere getting to the material." Then, says Stroud, "I let it rest, let it sit as long as I can. You can see the personality of each piece of wood, how you want to utilize it. The wood will tell you what to do with it, if you give it a chance."

Stroud makes the ferrules for his sticks out of old ivory, fits them to the shafts, faces them, then glues on the leather tips. "I use French 'Champion' tips, over 15 years old, that have been carefully selected and stored. I bought them from a tip fanatic in Evansville, Indiana. One old man in France made these tips, and he taught his son and the quality went down. When the Vietnam War started, the leather for these, water buffalo, disappeared. The hide has to be about two inches thick when you start. I have five boxes of fifty, paid $5 for each tip."

Meanwhile, Stroud says, "I've been working on the butt, begun the process of making the parts for the inlay from the design worked out on the Macintosh, assembled the background pieces, weighed all of those on a gram scale." The red is colored French maple, the black is ebony, the white is ivory, elephant tusk. "All the ivory I use was taken before I was born," says Stroud. "I'm a member of Greenpeace, and I'm concerned about preserving the elephants; I think they belong on the endangered species list. I think ivory looks better on the elephant than it does on ladies' hands or a pool cue.

"At this particular stage, I look at my chart and if it says 375 grams, then, when I'm finished, I know I'll have a 19½-ounce cue. The computer creates a discipline I didn't have before. Then I assemble it, put the butt plate on, put the cue back in the machine and turn it a few times. The longer I let it sit, the more I like it. I usually let it sit for two months. Then I put the joint in, and I meld the shaft and the butt together."

Stroud uses a unique custom joint, made for him by a local machinist—a stainless-steel screw, anchored in the butt of the cue, threads into a brass socket set into the shaft. The dissimilar metals, he explains, insure that the bolt and the socket will not seize together as sometimes happens in other joints.

"Eventually I fit the wrap to it," heavy Irish-linen threads tightly wound around the gripping area. "I hand-sand the cue to where it's as smooth as glass, using 1500-grit sandpaper; most auto finishers use 500-grit, one-third as fine. I coat it with the same polyurethane used on race cars, which costs $50 a gallon."

Several times a week, Stroud takes a finished cue to the post office for shipment to a waiting customer. "And," he says, "you see them again from time to time." Once, Stroud recalls, after a customer broke his stick for the fourth time, he and partner Danny Janes took a Louisville Slugger baseball bat, turned it down a bit on a lathe, so the handle of the bat would accept a joint, fitted a shaft and shipped it off—with a bill for $500. Janes now makes his top-quality sticks as Joss Cues Ltd. in Baltimore, while Stroud, in Colorado Springs, makes his as Joss Cues West.

Bill Stroud, who says he quit college after a couple of years because "I learned what college graduates were making and it never seemed reasonable to me—I was making $500 a week at pool when I was 16," now has a showplace home full of steel-and-leather furniture by artists like Mies and Le Corbusier and Eames, a red Mercedes 560SL in the garage, a black 16-valve Mercedes 190E for Barbara, in the driveway, and a snappy red Mitsubishi Montero they use to haul gardening supplies and wood. When Stroud needs to know the time, he can flick his cuff back and glance at his Rolex Submariner or his gold Rolex President.

But he yearns for more. "I overindulge," he says. "When you grow up without anything—I'm getting over it." Still, he now wishes he could push his cue making even further, until he achieves display by a gallery as well as by the hands of billiard and pool professionals.

"On the edge," Bill Stroud says, "that's where I want to be. In the middle, that's terminal."

Array of Stroud's ornate cues includes one (just below balls) inlaid with old ivory, gold and diamonds.

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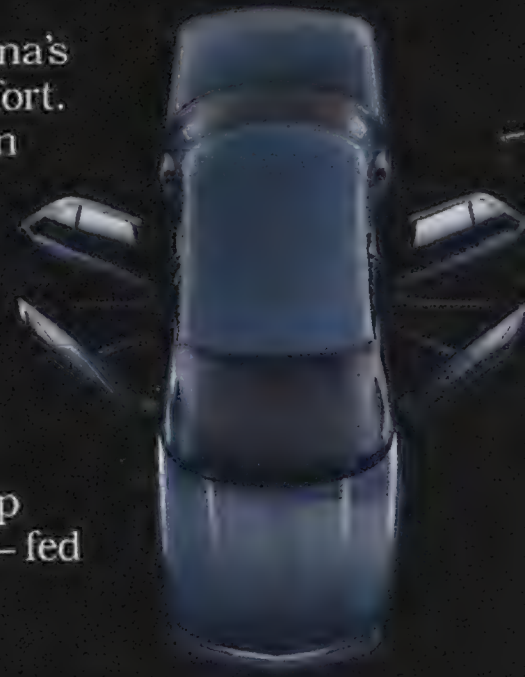

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TODAY'S CHEVROLET

By John Heminway

An immigrant artist captured the faces of the New World

A new show celebrates the portraits of Winold Reiss, a German remembered more for his design work than his passion for physiognomy

Tjark Reiss, the artist's son, is flanked by two of his father's works hung in an upstate New York barn.

Nothing gives the surprise away. The mailbox on the forested lane in upstate New York is unpainted, the driveway treacherous in winter, and the converted barn at the end weathered, unadorned, defiant. The son, the architect of this subtle memorial, guards himself against enthusiasm. When he greets the visitor at the door, there is about him, rather, a laconic air of resignation, as if he were but the gatekeeper, watching other men's traffic. He has, it appears, spent his 75 years trying to disguise a passion.

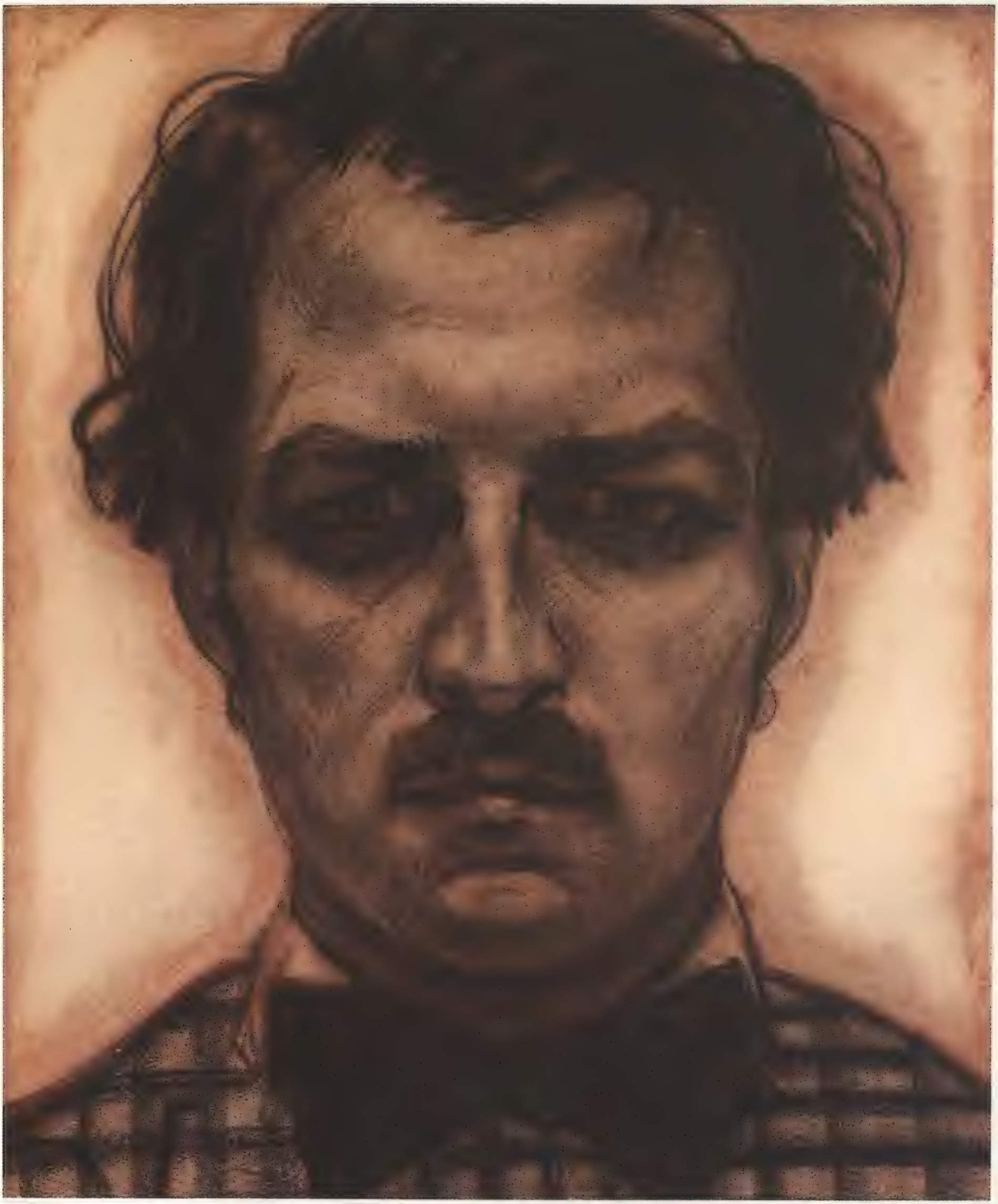
With few words, he takes you past his cramped office, through the minute kitchen, and into an angular room adorned with hand-carved chairs and a spitting fire. Here he pauses to caution you of the cold before sliding open the door to the repository. Indeed, the effect of entering the great room is of stepping into the night. At one end, beyond a high screen door through which wind and the piping of bats pass, the moon shines on a Blackfeet tepee outside. At another end, in a corner, a carved table, reminiscent of a German bierstube, is set as if for drinks. For a brief second, one's eyes travel up past a bleached horse's skull, high overhead to a fringed surrey, groaning in the wind as it swings from the ridgepole.

These are but diversions, for one is instantly commanded by the paintings. They illuminate the rough lumber siding of the barn, as sunbirds sometimes transform a gray rock. On one canvas, a construction worker, half again taller than life, wields a pick; on others, towheaded boys, players in the Oberammergau Festival, smile wistfully at each other; a great Piegan chief seems ambiguous about his own resplendence; a sublimely innocent Mexican mother cradles her infant while her man appears impatient, even desperate. Hate and ennui, coquetry, alcoholism, envy, blindness, calculation, despair and glory: from these walls one is watched by the face of Man.

The time frame is critical: not only do these walls capture the human species before we all wore T-shirts and jeans, but before the bone structure of our Western faces softened, the fire in our eyes was snuffed. This last hiccup of cultural history is recorded by one artist ignorant of racial stereotypes and with a sense of triumph in Man's variety, quirks, anomalies. Here eccentricity has become the stitching of humanity's fabric. And while it may seem each subject was urged to "dress up," in the end what endures is subcutaneous character.

This barn contains the world's largest assemblage of works by Winold Reiss (1886-1953). The sheer originality and incisiveness of these paintings pose a question: How can an artist of such considerable talent be largely unknown to most collectors?

The years of anonymity may be over, however. On October 27 the Smithsonian's National Portrait Gallery opened the exhibition "To Color America: Portraits by Winold Reiss." The show, which will run until April 1, 1990, highlights African-American leaders of the Harlem Renaissance, and the Blackfeet and Blood Indians of Montana and western Canada. An illus-



An intense young man looks out from a Reiss self-portrait, c. 1920, in pastel and conté crayon on paper.

trated catalog of the same title, by guest curator Jeffrey C. Stewart, accompanies the exhibition. Those familiar with Reiss may recognize him foremost as an Indian artist—a Depression-era George Catlin. While there is no denying that Reiss belongs in such company, his historic significance may ultimately derive from his portraits of Harlem blacks and from his remarkable renderings for restaurant design, which heralded decorative modernism in the United States during the first half of this century.

Winold Reiss' renown peaked in the 1940s and since then paintings by him have been seen infrequently, his great works often out of sight in private collections. Curators explain that his large portraits are so luminous that they compete unfairly side by side with works by anyone else, particularly the traditional Western artists. Some say, too, that his protean versatility militated against his own success. Who could take seriously the founder of a Greenwich Village art school, a portraitist who admitted to having designed a matchbox cover? The trouble is, these matchboxes, menu covers, grillwork doors, logos on restaurant trucks—all designed by this Munich-trained artist—have survived as talismans of American Art Deco.

"He came to America," says Tjark Reiss, Winold's son, "to paint Indians." Even accounting for the European fascination with the American Indian, inspired in part by the Leatherstocking Tales of James Fenimore Cooper, Reiss' motivation seems today a mite romantic. He arrived here in 1913, a 27-year-old man who had been married for just a year. His wealthy and strikingly beautiful wife, whom he had met at art school, financed the Atlantic passage. "He thought there'd be Indians waiting on the dock in New York," adds the son.

To someone averse to war, the kaiser's increasing belligerence must have been ominous. Hans, Winold's brother and a fellow pacifist, had already immigrated to Sweden. But for Winold, America with its dashing Indians seemed as far from the scene of impending battle as any destination.

From photographs, yellowed by age, one sees a young man with high-intensity eyes, dark hair carefully swept back, a mustache. All through his life he would insist on dressing well. On one occasion, a Tyrolean hat would set the style, on another, a beret, and on still another, a trilby. Even during the leanest years of the Depression, his Hupmobile mired in muck on the roads of Montana, Winold Reiss would continue to appear in photographs looking natty in his fringed buckskin jacket, the best-dressed member of the group.

But while he invariably faced the photographer with fixed jaw, one might detect that he did not take himself all that seriously. A letter home at age 17, during a lengthy bicycle excursion through Germany with his brother, is illustrated with cartoons in which Reiss has cast himself as the victim of events—a bewildered, gawky youth. Indeed, this self-deprecating air, this bent for the slapstick, is what ultimately sealed his bond with the Blackfeet.

Reiss' first art teacher was his father, in Karlsruhe. Fritz Reiss was a well-established landscape painter, specializing in Black Forest scenes that are still being reproduced on greeting cards. By the time the son received formal artistic education—at Munich's Royal Academy of Fine Arts and the Kunstgewerbeschüle (School of Arts and Crafts), he was well prepared for an expansive curriculum. He studied alternately under Julius Diez and Franz von Stuck, the bon vivant and celebrated teacher of Paul Klee and Wassily Kandinsky. From this association, Reiss developed a sense that art was the outline for all living spaces, whether it be represented by a woodcut, by the welcome of a couch, the line of a face or the shadow of a mantelpiece. In this regard—the holism of art—his education would remain essentially different from that of his peers in America.

Merging portraiture and decorative geometry

As Reiss advanced beyond the sentimentality of German Romanticism he was also witness to the dethroning of Art Nouveau and to the first footsteps of German Postimpressionism and Cubism. Reiss' technique was peculiarly positioned to make use of the insightful standards of the portraiture of Hans Holbein the Younger as well as the decorative geometry of the world of ornaments, lived and breathed by von Stuck. These two divergent artistic purposes merged when Reiss focused on the American Indian and his crafts.

Winold Reiss was in the United States for six years before his dream of painting Indians was realized. War and economics intervened. In New York City, he lived

Harlem Girl with Blanket was one of a series Reiss painted of black Americans in the mid-1920s.

He painted Paul Robeson in 1924, after the actor had appeared as the Emperor Jones in O'Neill's play.

Langston Hughes, a major poet of the Harlem Renaissance, was captured in a pensive pose.

Reiss also painted blacks on St. Helena Island in South Carolina: this is James King of Penn School.

Turtle, also known as Angry Bull, was Reiss' first Blackfeet friend.

Plume, or Bird Rattler, was a medicine man of the Blood tribe.

Julia Wades in the Water wore a dress of typical Sioux design.

on 248th Street with his wife and infant son. Working out of a studio on 15th Street, he devoted much of his time to commercial art. His design for the interior of the Busy Lady Bakery exploited the brilliant use of light, the spareness of lines and the bright colors that were to become his trademark. In 1916 he started his first art school and three years later he completed designs for the Crillon Restaurant at 15 East 48th Street. At first the owner of the building rejected the plans, saying they were too modern, too "circuslike," and threatened to break the lease with the restaurateur. Later this landlord became one of Reiss' greatest supporters, refusing to dine anywhere else. The Crillon was America's first Art Deco restaurant and New York's smartest. While its boldness may have perplexed the haute cuisine establishment at first, soon the lightness, order and purity of Reiss' Art Deco became appreciated for its elegant calm. The Crillon boomed.

Above all, Reiss was drawn to people, and New York was the place to find every ethnic type. "I can remember," says Tjark, "walking through Union Square on our way to Luchow's. Invariably, Dad would spot someone sitting on a bench or on the curb and he'd nod to Uncle Hans [who had left Sweden to join him in America]. Negotiations would begin as Dad and I watched, and when the person discovered he would actually be *paid* for sitting still, Uncle Hans would nod to us, the offer having been accepted. The first Indian that Dad painted was a Blackfeet he found traveling on the Third Avenue El, just fired from the circus and very hung over. Dad borrowed a war bonnet and beaded shirt from the American Museum of Natural History. He was beside himself. The first question he ever asked anyone posing for him, whether it was a fashionable New York society lady or somebody he'd found on the street, was their ethnic origin. It was important to him to know this background and he felt people should be proud of who they were. He had absolutely no racial prejudice. He defended every race, exalting in racial differences."

In the fall of 1919 Winold Reiss met his first Plains Indians. He and his student W. Langdon Kihn disembarked from the Great Northern Railway in Browning, Montana, at the heart of the Blackfeet Nation. The glory days of these masters of the Northern Plains had passed. The last battle with the Assiniboin-Cree, longtime enemies, was recalled by only a handful of elders, and in 1919 the tribe was no longer allowed to roam beyond the reservation. Still, in the first years of Reiss' work among the Blackfeet, few of them had lost their identity. Tradition and symbol continued to be life's buoys.

John Heminway is executive producer and presenter of the Public Broadcasting Service series Travels *and is chairman of the African Wildlife Foundation.*

Reiss called Mrs. Devine-Nenauaki one of his most beautiful subjects.

Floyd Middle Rider, just 14 or 15, posed in his father's shirt.

Wades in the Water was perhaps last Piegan to take an enemy scalp.

Reiss leapt into Indian society with ingenuous schoolboy gusto. On the station platform, he slapped the first Blackfeet he encountered on the back, showing him the palm of his hand in the much-caricatured Indian greeting, and bewildering him with his familiarity and enthusiasm. The word "How" was meaningless. Still, Turtle, also known as Angry Bull (as Reiss learned to address him), was actually more confused than maligned, and he eventually became a lasting friend and a much-painted subject.

Working out of one of the public rooms in the hotel, sometimes trudging on snowshoes to Indian lodges to paint by kerosene light, and sleeping in a bed that was alternately occupied during daylight hours by a cowboy, Reiss managed to turn out 35 portraits in about 30 days. The Blackfeet were so impressed by his industry they called him "Beaver Child" when they initiated him into the tribe.

"I think their respect for him comes from something else," says Paul Raczka, once the owner of a trading post on the Blackfeet Reservation and an acquaintance of several elders who had encountered Reiss. "There was absolutely no guile about the man. He wanted to record their greatness, not just for him but for *them*—and they spotted that immediately. I mean, look at these paintings, of Shot On Both Sides, for instance. He's wearing his yellow-and-red war paint, his red horned headdress. Blackfeet don't put on finery for anyone. It is their *status* and, therefore, very private. Winold Reiss had, over time, earned their trust. He was, they knew, one white man who wasn't about to rip them off."

"The bond between them and Dad was laughter," adds Tjark. "For instance, they went wild with his description of an audience before the German king: how you couldn't turn your back on the old monarch even when you were leaving his chambers. Dad reenacted this scene many times, tripping over stools, fumbling for the door handle, bowing and then falling down. They adored the skit."

When Reiss returned to New York in 1920, his pastels and tempera paintings were immediately exhibited at the E. F. Hanfstaengl Gallery. These Indians were not the stylized "redskins" the public had come to expect from the Taos and Southwestern schools. Instead, they stood by themselves: real people decoratively interpreted. Strong and sometimes somber faces, illuminated hands, heavy with age, were highlighted by the bold lines of their accessories—beads, quillwork, painted tents, baskets, parfleches and blankets.

All the paintings were purchased by Dr. Philip Cole; today, through a bequest, these constitute the permanent collection in the Bradford Brinton Memorial Collection in Big Horn, Montana. Strangely, Reiss did not return to paint Indians for eight years. In the interim, he developed his art school, completed a large number

The artist begins another portrait on the Blackfeet reservation near Browning, Montana. At least three of the Indians he taught went on to become artists in their own right. The group adopted Reiss; when he died, they scattered his ashes on their land.

of commissions for restaurants and hotels, returned to Germany to paint the peasants of the Black Forest and traveled several times to Mexico. On one of these trips he met Katherine Anne Porter, who was struck by the artist's ebullient energy. In declining Reiss' invitation to undertake a 25-mile walk that day, she noted in her journal: "He showed me some rather remarkable sketches of Indians and told an amazing story: he had tramped the states of Oaxaca, Jalisco, Puebla, and I think, Morelos . . . alone, unarmed, carrying enough food to last only from one village to another." During the next two years, Reiss illustrated several of Porter's short stories for *Century Magazine* as well as articles on Mexico for *Survey Graphic Magazine*, where she served as art editor.

Beginning in the mid-1920s, Winold Reiss spent much time in Harlem to paint portraits of the African-Americans there. It was a time of stirring cultural change, now referred to as the Harlem Renaissance. The clichés seemed to interest him little; he was drawn instead to figures who, to him, at least, were at the forefront of the revolution: black lawyers, black college students, a singer, a poetess, a public school teacher. In 1927, he painted black Americans in the South, notably on St. Helena Island off South Carolina.

In 1925, when a body of his work was complete, no gallery in the "heartland" of New York showed any interest in his subject. Only the Harlem Branch Library would put on the show. Roland Hayes is looking askance, his head lost in simple white. Paul Robeson may be smirking, his handsome, powerful head still unaware of contradictions. A little girl has bobbed her hair like no other girl. Black essayist Alain Locke wrote of the show: "And by the simple but rare process of not setting up petty canons in the face of nature's own creative artistry, Winold Reiss has achieved what amounts to a revealing discovery of the significance, human and artistic, of one of the great dialects of human physiognomy. . . . In design . . . he looks not merely for decorative elements, but for the pattern of the culture from which it sprang." Today, 12 of these paintings are in the collections of the Smithsonian's National Portrait Gallery.

By now, Hans, a sculptor, had arrived in New York to help his brother with the art school. The muggy summers in the city, however, inflamed his allergies and he took to spending them in Glacier National Park, doing what he liked best—mountain climbing. One of his first clients, soon after he obtained his mountain guide license, was Louis W. Hill, president of the Great Northern Railway. From this brief association a deal was struck for brother Winold to paint the Blackfeet Indians in Montana and Alberta on behalf of the railway. Thus in 1927 a summer tradition began; it remained more or less unbroken until the start of World War II.

In this first year, and for many thereafter, Tjark, then age 14, served his father as scribe and crayon sharpener. Winold was now divorced, and during the school year this only child commuted between his father's studio in Greenwich Village and his mother's home uptown. In the summer he went to Montana. "During all those years, I can only remember Dad taking one day off—and that was to go mountain climbing in Glacier Park with Uncle Hans. Partway up, he found he suffered from vertigo and for five

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hours was left by the others on an 18-inch-wide ledge, towering over Glacier Park. He disliked that experience so much he never again declared a holiday."

So consumed by the details of character was Winold Reiss that he hired his son to record the history of each of his subjects in Glacier Park: their lineage, their great battles, their horse-rustling forays, details of their first meeting with a white man. His interpreter was Percy Creighton, half-Scot, half-Indian; he, too, returns to life today in paintings by Reiss, his eyes half-shuttered, not as asleep as he would have you believe, the cowboy hat unable to disguise his origins. It was his job as well to tell stories to the old men being painted or to have them tell about their lives, to keep them from falling asleep. He and Tjark scouted the reservation in search of subjects.

"It was an extraordinary life for a boy. At the age of 40 Dad learned to drive and every year we'd reach Glacier Park first by Hupmobile: long, long back-breaking drives. After Minneapolis the tarmac gave out and when we weren't fighting the washboards, we were negotiating with a farmer to pull us out of a ditch. . . . But it was the Cadillac that finally broke Dad. He was so proud of that car; he had paid $4,500 for it. But when we reached the park we had to put it up on blocks: it was so damn expensive to run. Dad of course never admitted he was strapped. He was too proud for that. He said simply the park roads would surely damage it. And in the fall when we returned to New York, I went up and down Broadway to used-car dealers. Dad refused to come with me. Finally I found one who offered $600 for the car. The news just killed my father. The year was 1930 and times couldn't have been tougher."

In the summer of 1934 Reiss took his art school to Montana. He was known as a gifted teacher (among his many students in New York had been Marion Greenwood and Ludwig Bemelmans). The Glacier Park art school was located in a log lodge on the shore of St. Mary Lake in sight of the rugged Continental Divide. "Classes began at 9 each morning," remembers Tjark. "Usually the Indians posed in their own ceremonial robes. However, if they didn't have any, we would borrow a fine one from Margaret Carberry, who ran the trading post in Glacier Park Station." In addition, Reiss offered free instruction to Blackfeet. "His message, whether to them or to blacks in New York," says Tjark, "was always 'Paint like yourselves, not like me.' "

The painter is equally famed for his design work, as exemplified in this treatment for a New York bar.

Subsidized by the Great Northern

The Great Northern Railway underwrote most of Reiss' trips West starting in the late '20s. Louis Hill bought at least 80 of his paintings and others were reproduced on the railway's annual giveaway calendars. Today the Burlington Northern Railway and the Hill Estate closely guard a large number of these vintage Reisses. Ned Jacob, a contemporary painter of Indians, knows many of the works. "It's quite extraordinary imagining that one artist virtually painted one whole tribe," he comments. "I might occasionally take exception with him when he searched for a design and that design tarnished, compromised, his subject. But that's rare. Never was he patronizing of a subject. Never did he romanticize the Indian. His strength lies in the character he wrought from those faces. Only Karl Bodmer comes close."

During the winters Reiss' design work boomed. Henry Lustig, an immigrant whose first career had been as pushcart peddler, commissioned Reiss to design a restaurant. Lustig called it Longchamps and soon it begat a chain of others stretching from New York to Philadelphia to Washington, each one designed and decorated with an integral theme by Reiss—Mexicans, American Indians, American Presidents. In addition, nearly 30 theaters, hotels, taverns, offices,

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A Chinese woman in a Qing dynasty wedding headdress was the cover of a special issue of *Survey Graphic.*

foyers and cafés in New York, Chicago and Boston were given the Reiss touch—a combination of modernism, fresh color and clean, elegant lines that made people instantly feel comfortable.

Reiss' largest commission was the Cincinnati Union Terminal (SMITHSONIAN, June 1974), opened in 1933. Here he was allowed a space of 12,000 square feet and given instructions "to come up with something about Cincinnati." Indeed he did: one year later this vast rotunda was illuminated by two 110-by-22-foot murals, illustrating the history of transportation, and the rise of Cincinnati and the opening up of the West. In the 450-foot-long concourse, 21 mosaic murals lined the walls, each one of them depicting the workers of this Midwestern city's industrial muscle. So driven was Reiss by this commission that, at the last minute, he suggested halving his fee in order to work in the material of his choice: glass mosaic. For years his great work was one of Cincinnati's landmarks. When the days of long-distance rail travel came to an end, the station was mothballed. Recently, though, money has been voted to transform the rotunda into a natural history museum and soon these powerful murals will return to life.

During the 1940s, Reiss' career began a decline. A strong anti-German sentiment denied him access to many clients. One false rumor suggested he had been a schoolmate of Adolf Hitler's. (During World War I while riding a horse near Woodstock, New York, Reiss noticed he was being followed. When he cross-examined his pursuer, the furtive man admitted he had been investigating allegations that Reiss was planning to poison New York City's water supply.)

For years Winold Reiss had dreamed of creating a museum to document the Indian's greatness. He would call it "The Monument to the American Indian." He drew up plans to show the spare, honest look of the building. He calculated that he would need ten years to travel throughout the West, and he began a careful approach to sell the concept to America's great philanthropies. But in an ominous litany, the plan was rejected, charity by charity, and by the late '40s his plan had been abandoned.

At the same time he sensed the demoralization among the Indians. He despaired to see old friends abandon their ways, to see the Bureau of Indian Affairs deny them access to pathways, customs and beliefs that gave meaning to their lives. Most of all, Reiss loathed to watch the Indian drink. "He was appalled to see a human being—any human being—lose his dignity," recalls Tjark. When his monument failed, Winold Reiss knew he had run out of time.

Indians, in the end, may have been for Reiss the cause of his critical neglect in recent times. "He's automatically lumped into the 'Western artist' category—whatever that means," says Ned Jacob. "It's this big area, amassed usually by seekers after romance and not always by professional collectors. Reiss' work must, therefore, compete by and large with draftsmen. He's clearly in an artistic category of his own but because of this one subject—Indians—of all the people he documented, he is written off by serious collectors. It's a lonely injustice."

On August 29, 1953, Winold Reiss, the German who had celebrated America, died of complications from a massive stroke, his work largely overlooked by America. But a few Americans did take note. After the ice thawed on Cut Bank Creek the following summer, a parcel arrived at the post office in Browning, Montana. It was sent by Tjark Reiss and was addressed to Bull Child, an old friend of his father's.

Several months later Tjark heard through an interpreter that Bull Child had collected all who remembered the artist. On a day when the wind played tricks, they gathered on Red Blanket Hill, at whose feet the cottonwoods were shedding. Here, at last, with the old Blackfeet Nation in attendance, the ashes were scattered. The high wind took them far.

Winold Reiss had, at last, arrived.

Reiss' rendering of *Two Harlem Girls*, especially the hair, may have been influenced by Egyptian sculpture.

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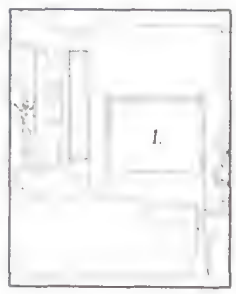

1. Mitsubishi VS-7002R 70-inch rear-projection TV shown here with actual picture. Featuring Diamond Vision II electron-gun technology. 120° horizontal viewing angle. CCD Comb Filter for greater image detail. 240-foot Lamberts of peak brightness. Super-VHS compatible. MTS stereo reception. Programmable "learning" remote that replaces all your other remotes. *© 1989 Mitsubishi Electric Sales America, Inc.* *For the name of your authorized dealer, call (800) 527-8888 ext. 245.*

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IT'S A SMALL THEATER.

Lebanon, Indiana, corn growers Jon and Shirley Woody knew a cornstalk-and-barn mailbox would serve best.

Checking up on what the mail must go through

Along rural back roads, a photographer finds that many folks have an irrepressible urge to create a mailbox they can call their very own

In 1901, several years after Congress had introduced Rural Free Delivery (RFD) to the country, the Postmaster General found himself with a huge dilemma: Just what *is* a mailbox and how should it look? By one mail carrier's account it was a daily challenge just to figure out where to put the mail. Some had "tomatoe cans, cigar boxes, drainage pipes up-ended, soapboxes, and even sections of discarded stovepipe." Another carrier found a note attached to a cracked fencepost instructing him to "Put the Male Here."

One year later, after a study commission had examined several rural mailbox designs, a standard was set. RFD patrons had to erect at their own cost a box meeting certain specifications. "All square or oblong boxes shall be made of not less than 20 standard gauge sheet iron or sheet steel, and galvanized, the edges of which shall be supported or strengthened either by folding the metal back upon itself or by riveting. . . ." The report went on for pages describing openings, size, workmanship, inspection of manufacturers, roadside placement and even went so far as to deny patrons RFD service for neglecting to comply.

But out along the RFD routes, bureaucratic attempts to impose standardization have always cut against the grain. As a hobby, for the past four years freelance photographer Ken Frick has been seeking idiosyncratic mailboxes by tooling his motorcycle around the country's back roads where "there is no traffic, no diesel fumes and no construction." Out there, as the pictures on these pages suggest, neither rain nor snow nor gloom of night—to say nothing of Postmasters General—will stay the people from putting their own stamp on things.

Beth Py-Lieberman

Becca Hoover of Dublin, Ohio, enshrined a love of turtle soup and pet box turtles with a handmade icon.

In Dublin, a tractor is repository for mail addressed to the Ohio Association of Farm and Power Retailers.

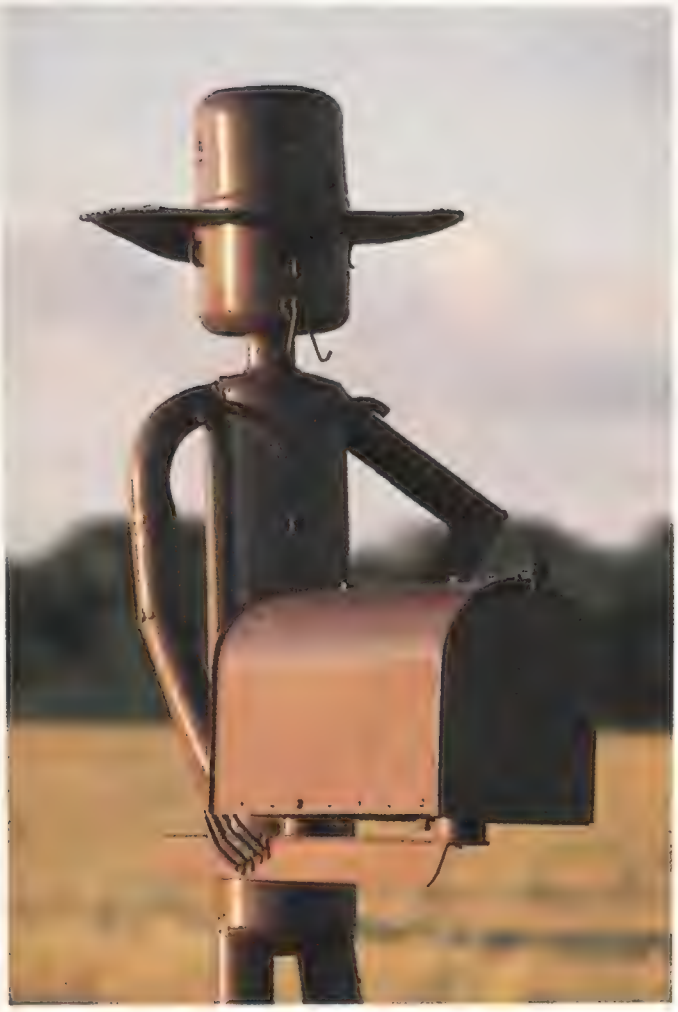
For Addie Beth's 50th birthday, daughter Martha Key painted Johnson family home in Eldridge, Alabama.

In Morrison, Colorado, the Metzes, of Norwegian descent, show evil trolls from an ancient folktale.

The Whites, hog farmers in Nacona, Texas, asked sister Angie Jackson to create a vignette of their farm.

Retired pig vet Dr. Russell Hardin and wife Peg of Lebanon, Indiana, now own some 4,000 bacon makers.

Photographs by Ken Frick



Decade-old mailbox is memorial to livestock lover Leslie Williams, who passed away in 1987; daughter Beverly Thornton now uses it.

Cowboy box holder was built by Rex Ackerman from truck and air-conditioner parts for Kansans Reed and Jolene Griest.

In Marion, Ken Cranmer, a 25-year employee of Ohio Edison, has a benign 7,200-volt transformer mailbox.

Wicked buzzard guards Ruby O'Daniels' packages in Rockwood, Illinois; son Gary made it from a shovel.

Tiny house with shingled roof was built by Paul Von Kiedrowski of Hamilton, Illinois.

Choochoo chugs past home of Burlington Northern Railroad employee Ken Kiefer, wife Joyce.

LORD NELSON AND MILSTAR

Trafalgar, 1805, the battle that was to lead to the eventual undoing of Napoleon, was won because Admiral Horatio Nelson had a secret weapon: signal flags.

The technique of communicating over long distances by coded flags had only recently been invented by the Royal Navy. It revolutionized naval warfare.

The system enabled the British ships to cover vast expanses of ocean, looking for the enemy, while remaining in close contact with the fleet commander. It also allowed tactical flexibility once battle had been joined. Other navies were bound by rigid battle plans

The Battle of Trafalgar, by Clarkson Stanfield, 1836, The Institute of Directors, London

agreed upon in face-to-face councils long before the first broadside. They were confounded by the British and their talking flags.

The result of Trafalgar, and in large part this communications system, was that Britain enjoyed undisputed rule of the seas and over a century of relative peace; a *Pax Britannica.*

In modern warfare, command, control, and communication are as decisive factors as they were two centuries ago and even more complex. History is peppered with anecdotes of communication breakdowns leading to fiasco. It has been called the fog of war.

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What Nelson's signal flags did for Britain two centuries ago, helping to insure a century of peace, Milstar can do for the West. And that is, after all, the object of defense.

Lockheed
Giving shape to imagination.

By Robert Day

'Sooners' or 'Goners,' they were hellbent on grabbing free land

Oklahoma belonged to Indians till 1889, when the starting gun went off for a series of land rushes that stole it away

On April 18, 1889, just before the run, hundreds of covered wagons filed toward the starting point.

Free Land! Free Land! These were magic words to Americans living along the Eastern Seaboard in the 1860s, and the magic "Lotto America" number of the Homestead Act, passed in 1862, was 160, as in "one hundred and sixty acres" of "free land" in the West for anyone who wanted to claim it. Well, nearly anyone.

First, you'd probably have had to make it through the Civil War with all your faculties intact; second, you had to be 21 and healthy enough to get to the Wild West, sometimes by train, more often on foot or on horseback, or bouncing along in one of those remarkably uncomfortable wagons now only seen in Frontier Days parades. Beyond that, it definitely helped if you were a white man rather than a black man, and it was much better if you weren't a red man, or a woman—a woman of any color.

If Americans find discomfort today in both the moral and mechanical conveyances of mid-19th-century land policy, few of our forebears shared the concern. After all, they were talking free land. Free Land! In Kansas. In Nebraska. In the Dakotas. In what was thought of as the limitless West. And finally, pretty much at the end of it all, in the Indian Territories in Oklahoma, a huge piece of real estate that had been given to displaced Indian tribes but then, in an act that still shocks America's conscience, was taken back.

The Oklahoma Land Rush of 1889 was a spectacular and, in several senses, a peculiarly American event. It was the first of several Oklahoma land grabs that sealed the fate of the American Indian. And it served as a kind of death rattle for the American frontier—a region that has long specialized in dramas of its own mortality.

The reasons why mid-19th-century political leaders, including Horace ("Go West, young man") Greeley, wanted to populate the Western plains were complicated. The end of slavery, the continued rise of Manifest Destiny as dream and expansionist doctrine, a pervasive romantic vision of the self-sufficient farmer, not to mention the threat of surplus labor in the big Eastern cities, all played significant roles in the development of land policy. One of the more curious forces at work, too, was the simple desire on the part of the Eastern Establishment to "sivilize" (Huck Finn's spelling) those barbarous folks out on the prairie.

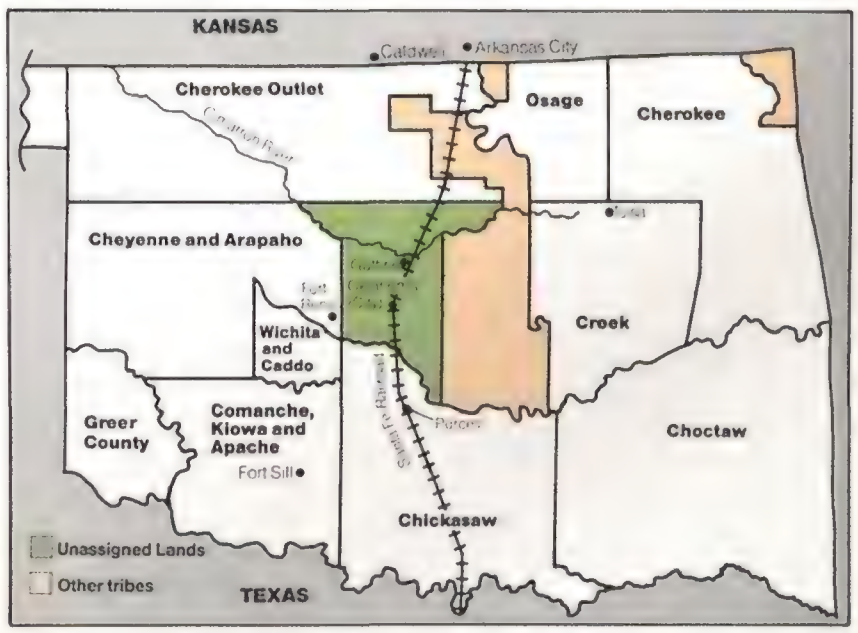
Washington Irving put it best when he warned that new "mongrel races" may spring up on the plains "like new formations in geology, the amalgamation of the 'debris' and 'abrasions' of former races . . . of adventurers and desperadoes of every class and country

Some 50,000 homesteaders took part, hoping to claim an estimated two million acres of free land.

yearly ejected from the bosom of society into the wilderness." No less a personage than England's great statesman, Edmund Burke, feared the frontier would produce "hordes of English Tartars." There were other preoccupations too, not the least of which was water. West of St. Louis, it was thought, there was so little water that almost nothing but camels and scorpions could live.

In the end, none of this mattered. Not Burke, not Irving, not Greeley, not the absence of rain. The land in question was free, and smack in the middle of the American psyche the idea of getting something for nothing got roped to the idea of striking out for the West. After all, we hadn't been there before.

Starting in the 1860s we went there so energetically that by March 23, 1889, when President Benjamin Harrison finally announced that the "Unassigned Lands" would be opened for public homesteading at noon on April 22, the race to claim it promised to be one of the great land grabs in American history. The



Oklahoma territories (minus panhandle) in the year of the first rush, with green area representing Indian lands opened in 1889. Many homesteaders stayed in Kansas till four days before the rush, then crossed the Cherokee Outlet, or "strip," to start.

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Like this one, many land-rush families arrived early, got themselves pretty well established as they waited along the Kansas border.

Unassigned Lands in question consisted of about a two-million-acre chunk of turf, roughly the shape of a fat fireplug (see map, page 193) 80 miles long and 50 miles broad right in the heart of what is now the state of Oklahoma. With the rush that followed in 1889, and a succession of Oklahoma land rushes that came later, Americans had begun to homestead the last of the West. The census of 1890 would note that America was a settled nation. The "frontier" had filled up with ourselves before our very eyes and was no more.

For that first push into the last frontier on April 22, 1889, more than 50,000 hopeful settlers had made their way to the borders of the territory. They came in every kind of conveyance. They came not only from all over the country, but from Europe as well, and crowded in along the borders of Oklahoma. When the gun went off they were ready to make a rush for some 12,000 previously surveyed quarter-sections of land. There were also some small but potentially more-valuable chunks that would become town lots in such rail stations as Oklahoma City and Guthrie. During the months and weeks before the start of what would become known as "Harrison's Horse Race" something like a national and international frenzy set in.

Long before President Harrison's proclamation, people had been interested in grabbing up or promoting land in the Oklahoma country. They became known as Boomers, 19th-century parlance for salesmen, or advocates—precursors of the real estate agents who today sell "high and dry" lots in Florida or "mini-ranches" in eastern Colorado.

In Oklahoma there were not only Boomers but Old Boomers—meaning people who camped out in Indian lands years before they were opened. During the decade of the 1880s, hundreds of hopeful Boomer colonists made intrusions into Indian territory, where they staked out land, pitched tents, carved dugouts into riverbanks, and propped up lean-tos and pole barns. Their leader was a hard-drinking Kansan named David Payne, now known as the father of Oklahoma. From 1880 until his death four years later, Payne's big idea, rudely stated, was to claim the land first and settle the legal questions later. He believed

Robert Day, a novelist and professor of English at Washington College, is author of Speaking French in Kansas.

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the land in Oklahoma belonged to no one but the United States of America (as opposed to the various Indian nations with whom the U.S. Government had signed sacred treaties) and therefore the act of settling in the Indian territory could not be considered trespassing, or a criminal offense.

The Unassigned Land was a would-be island of white man's land in the midst of territory still officially the property of Indian nations. It had been labeled "unassigned" in 1866, when it was stolen from the Indians by the federal government, ostensibly as punishment for supporting the South during the Civil War.

Plains tribes like the Kiowa, Comanche, Caddo and Wichita all lived in Oklahoma. As did the five "Civilized Tribes" (Cherokee, Choctaw, Chickasaw, Creek and Seminole), so named to distinguish them from the Plains Indians, who were seen as more prone to fight against white intrusions. The Civilized Tribes had long ago been driven along the Trail of Tears from their Eastern lands into an "Indian territory" that they were to own "as long as the waters run."

The President's March 1889 proclamation forbade anyone to be in the Unassigned Lands from that date until the starting gun went off April 22. Boomers who tried to stay there in violation of the rules, and others who snuck in illegally after March 23 hoping to hide out and get land early, became known as "Sooners"—that is, people who jumped the gun into the Unassigned Lands. After March 23, when Sooners were caught by federal troops they were usually escorted to the nearest border, where they found they had to compete like everyone else. But even when they did, they had a great advantage. They knew the land they wanted and how to get to it in a hurry.

Journalist Nannita Daisey staked her claim and got a byline in the bargain.

Fleet-footed lawyers quickly set up field offices among clients-to-be.

In the days before the official "rush" on April 22, many people waited in makeshift camps along the borders of Oklahoma. But by far the largest crowd of would-be settlers gathered north of what was known as the Cherokee Outlet along the Kansas border. The towns of Caldwell and Arkansas City (Ark-City) were overrun.

"A week before the fateful day," historian Stan Hoig writes, "Arkansas City had mushroomed into a gathering place for thousands. . . . Cot hotels, saloons, and gambling places sprang up in tents on vacant lots. Every street corner was occupied by hucksters. . . . When night came, those without quarters unrolled their blankets wherever they best found a spot." Many wagons were stacked high with survival gear: water barrels, pots and

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pans, and furniture. Since the conditions for holding onto the land included living on it and improving it by planting crops or putting up a house, there were tools for building and heavy metal-edged plows, too.

Parking, 1880s-style, was a problem. In one afternoon, 250-odd prairie schooners clattered into Ark-City, whose normal population was about 8,000, hauling in more than 500 Boomers to join more than 10,000 already camped in and around town. Riders, buckboards, oxen and mules choked the streets. Some Boomers rode bicycles à la Paul Newman in *Butch Cassidy and the Sundance Kid.* There was a rumor that some enterprising souls had a balloon in which they planned to ride the local zephyrs to a free farm all their own. Given the prevailing winds, they likely would have landed in the Ozarks, if not Oz.

People who came by train in search of small townsites rather than homesteads dash from the depot in Guthrie to find their piece of land.

Naturally, real estate men popped up ready to sell you shares in land companies at sites that were, or were likely to be, designated as towns. That way, at a price, you could get a piece of the action without making that messy dash across the prairie. But whatever lot you got, it wasn't enough to be the first there and to drive in a stake. The claim had to be well marked, so that runners who wanted town lots were handicapped by having to carry shovels, axes, a bundle of wooden stakes, twine and tents (above), as well as personal stuff to spread around their claims.

Settlers went into the territory from all sides. But as to the huge Ark-City and Caldwell contingents, a decision had been made by the federal govern-

Before it could be claimed and owned, a site first had to be carefully staked out, then improved and lived on for five years.

ment to let crowds of homesteaders who had been held at the Kansas border move, on April 18, sixty miles across the Cherokee Outlet to the edge of the Unassigned Lands. There they would camp until noon on the 22d, when the great race was to start.

A few days before this Ark-City exodus a terrible prairie rainstorm struck —the kind that dumps a half-year's average downpour in five hours. The result, when combined with the thousands of horses and wagons, created a traffic jam worthy of a modern city at commuting time—one difference being that when horses, mules and oxen idle in frustration they don't spew carbon monoxide. It was more than the free land ahead that compelled those homesteaders to hit the trail out of town.

What waited for them between the Kansas border and the Unassigned Lands was a stretch of prairie grass, dustless because of the recent rain. Had the wizard balloonists in fact floated high and mighty over it all, they would have seen mile upon mile of green plains white with the flapping canvas of prairie schooners.

One man had built a regular house —a kind of precursor to the motor home—on top of his wagon; a stovepipe poked up through his shingled roof as he rattled along. Another unfurled a giant American flag to the cheers of all those around him. Ahead were swollen rivers and broken bridges to cross, but spirits were high. By the evening of the 21st most people who wanted to make the run on the 22d had left Ark-City (or other staging grounds on the borders) and were

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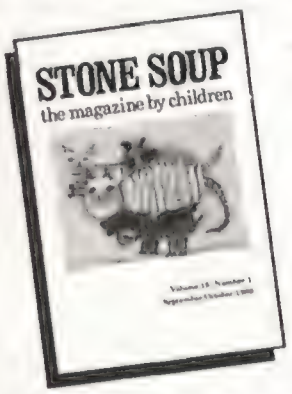

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in place all around what had once been Indian territory; it was as if the white man reversed the image of movies yet to come: their wagons had circled the enemy; the next day they would charge.

Among the 50,000 people waiting on April 22 were Mina and Lee Patterson, a young married couple from Kansas. As far as Mina Patterson could see, horses and wagons were lined up and waiting for the start. But Mina was doubtful that her husband would get far in their quest for free land: their oxen had gone lame during the trip down from Kansas, and they didn't own a horse. It looked as if Lee Patterson was going to have to make a dash for it on foot.

Just before the starting gun, Mina suddenly ripped her bright-red calico apron into strips and tied them around Lee's arms and ankles. In a final flourish, she made a headband for him: red, like an Indian. Red, like the color of the dirt that lay before them.

Perhaps it was for luck. Perhaps it was to give Lee courage. Perhaps it was simply that Mina wanted to be able to spot him among the clattering multitudes who in a few moments would spur their horses off across the prairie, leaving Lee in their dust. Whatever her intent, the result was dramatic. The word swiftly spread among the settlers that Patterson was a famous runner; his headband and arm and leg bands were ribbons for great races won all across the nation and in Europe, as well. It would be a good idea, so ran the conventional wisdom in the crowd, to steer away from him. Horses can tire or throw a shoe. Wagons can break an axle. But a runner like Lee Patterson knows better than to rest on his laurels: wherever he's heading, he'll get there first. Better stay clear of him.

Painters did a brisk business in signs for a future boomtown. Services are predictable, though the undertaker may have been overly optimistic.

Black family stands on homestead, backed by the log-and-canvas cabin with which they have recently improved their new claim.

Bugles sounded, guns (even including a cannon) roared and the throng was off. As the crowds of oxen and mules, thousands of horsemen, buckboards and wagons kicked up dust heading out across the prairie, it seemed to Mina Patterson that Lee was running in a direction no one else had chosen. Over the slight hills he went, red ribbons flapping as if he were some hero in a great marathon. And soon he was out of sight.

A few settlers thought the best strategy was to be safe, not sorry. Although land at the borders was not choice, when the starting gun sounded they simply stepped over the line and, as the great thundering herd roared by, began driving stakes.

One woman stuffed herself into a mattress in the back of the family buckboard driven by her son. As the team of horses raced over the first quarter-section he booted his mother overboard; she landed with a thud, only to pop up through a blizzard of feathers to stake her claim, while her son bolted over the next hill where more land beckoned.

Some settlers turned adversity to advantage. A man who fell off his horse, while riding into Kingfisher, bounced up yelling "My claim, my claim!" And a Sooner who ran back to claim a homestead he had been illegally living on for at least a year had the aplomb to say to suspicious authorities, "Great soil! Planted these onions yesterday and they popped up overnight!"

Ingenuity was not limited to future homesteaders. For the press, getting a story back to civilization was a serious communications problem. To get his story to the paper ahead of other reporters, H. L. Preston of the Kansas City *Star* established a miniature Pony Express. Preston hired cowboys and scattered them along the Ark-City-to-Guthrie railroad tracks. As the train chugged along on the afternoon of the 22d, Preston tossed his copy out a car window to the waiting riders, who rode it back to Arkansas City to be wired to Kansas City. In Guthrie, other, less-innovative reporters had to wait in a long line for the only telegraph key in town.

The chaos just after the start must have been indescribable. Some wagons instantly broke their axles or had their harnesses strain and snap—and their horses run away. What to do then was an awful problem: Chase the horses or take off across the prairie on foot? And even if your wagon stayed intact and you were bumping along with the family—with the kids asking "Are we there yet?"—there were still agonizing decisions to make.

Many Boomers and Sooners knew where they were going and how to get to targets they had picked out, even lived on, earlier. Some settlers had

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chosen spots on inaccurate maps as targets, but of course they couldn't be sure of getting there first. But plenty of hopefuls just trusted to speed and to blind, dumb luck that over the next hill, or beyond the next stand of cottonwoods, land would appear that looked like it ought to have their name on it. And as others passed them one can easily imagine debates between husbands and wives, like those every couple has had about where to stop for a picnic, only raised to some tenth power of emotion and anxiety because in this case their whole future life might depend on what they decided.

Finding land wasn't as hard as claiming it and keeping it. The U.S. Survey Bureau had marked out the corners—with a blazed tree, a post or a heavy stone—of about 12,000 homestead parcels of 160 acres, each a quarter of a 640-acre section. The general method was to pile off your wagon and drive a stick into the ground with a flag of some kind that had your name on it, and whoop and holler that this parcel was yours.

Doing so would more or less put your John Henry somewhere on the parcel you planned to claim. But you still had to locate the four corners of the parcel you wanted, and locate it on a larger grid based on another series of surveyed markers. Even then the possibilities for confusion were considerable. Say you had jumped off your horse onto what looked like a good spot. You had even driven your stake, and started walking over a slight rise to survey your domain—only to find that someone on the other side of the hill was doing the same thing. Just about everybody packed a gun, and at these moments, guns were sometimes drawn and less-than-Christian words exchanged.

After the land rush, photographers for the papers liked to pose settlers facing each other with guns drawn. But for the most part there wasn't much actual shooting. As it turned out, most homesteaders seemed to think that free land farther on was a better prospect than fighting over a disputed tract. If a single settler found himself competing with a family, like as not he would give way, pulling up stakes and heading out again. Many of the runners (to be known thereafter as "Goners") didn't choose to stay on the land they found. Instead they drifted out of the Unassigned

Before-and-after views show growth of Oklahoma City between April 22 and May 13, 1889. Population grew to 10,000 by night of the 22d.

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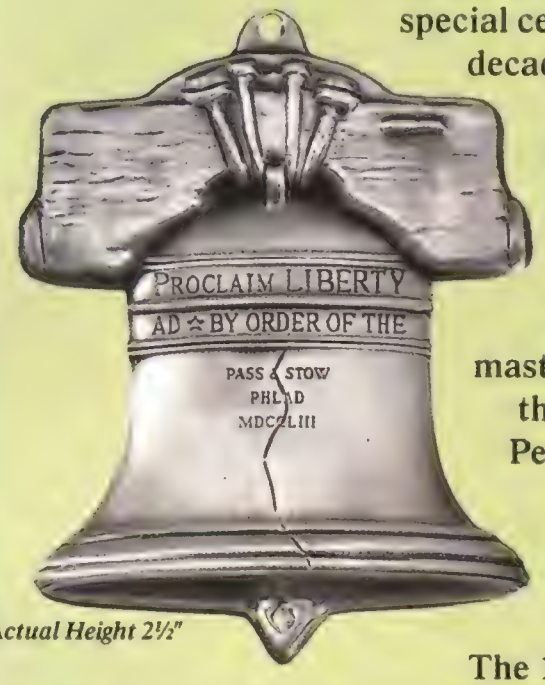

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Lands to await another opportunity.

Filing a claim could be done within three months. But everybody knew that sooner was safer. Settlers had to be able to defend their homesteads against the possibility of late-arriving claim jumpers. The really important thing was to improve the land, usually by digging or by putting up some kind of shelter. To get final title to it you had to work it for five years, and even then it wasn't quite free. You had to pay $1.25 an acre, plus registration fees. Over the years, plenty of title conflicts arose, with the result that legions of tent-city lawyers did well on counterclaims.

By nightfall on April 22, thousands of sites had been staked. Near Fort Reno a few disappointed Goners had drifted back over the border, ready to head into Kansas and wait for future land rushes. Toward dusk, Mina Patterson stood waiting by the wagon with her lame oxen when, on the horizon, she saw a man whose body was adorned with red cloth. He had a bounce in his walk that told her he had staked his claim. It was Lee. He had run for miles to find their homestead. Next day the Pattersons, their oxen now rested, slowly crossed the line to begin a new life for themselves not far from what eventually became the town of El Reno.

It is the irony in history that makes it amusing to read, or sad to contemplate. In less than a hundred years from the time the Pattersons settled their small portion of the Unassigned Lands, thousands of fans at Owen Field (the Oklahoma University football stadium at Norman) were regularly whooping out "Boomer Sooner! Boomer Sooner! Boomer Sooner!" in unwitting celebration of flagrant cheating or free enterprise. To enlightened ears the first word of exhortation conjures up a period of real estate greed. The second is sheer bragging about rules violations.

But like the Land Rush itself, self-conscious chastisement was not the tone of this year's centennial Land

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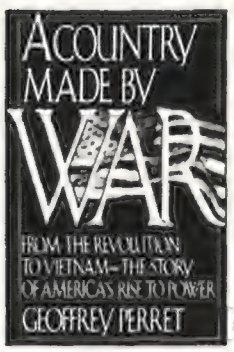

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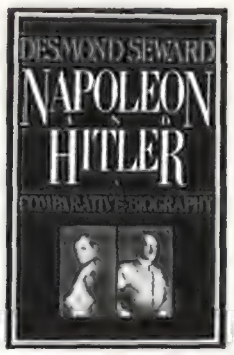

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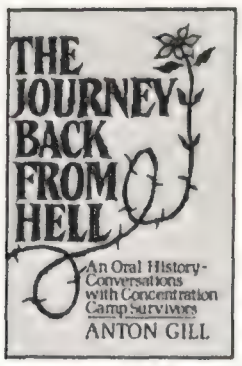

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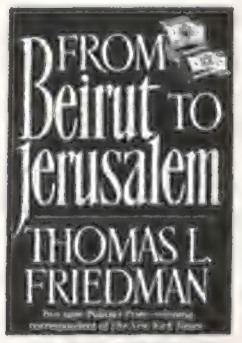

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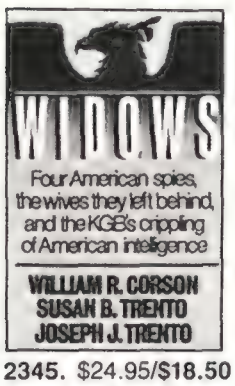
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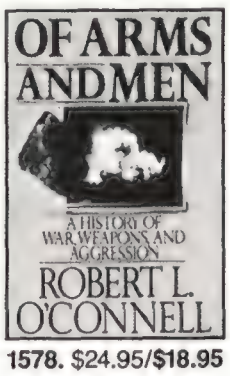

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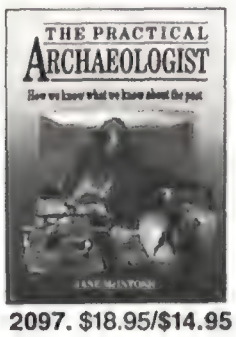

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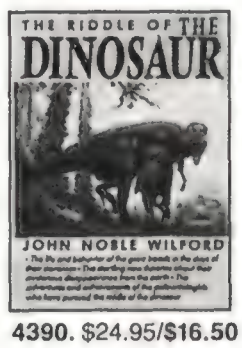

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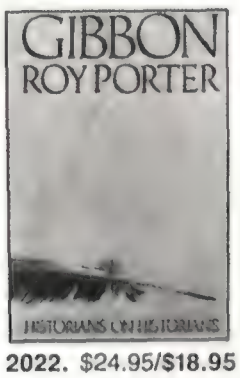

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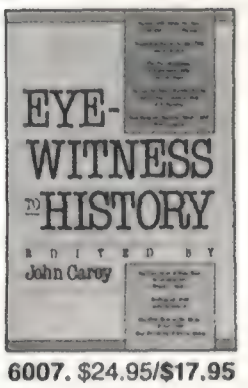

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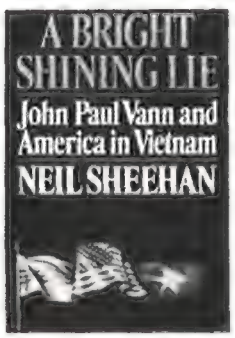

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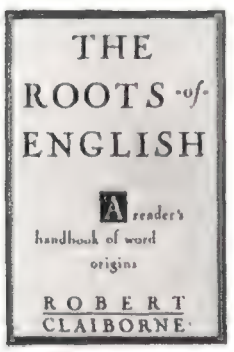

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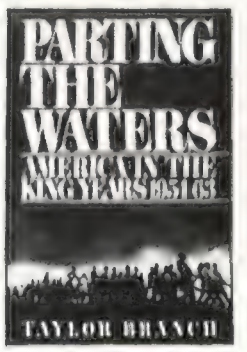

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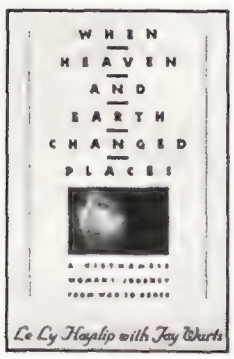

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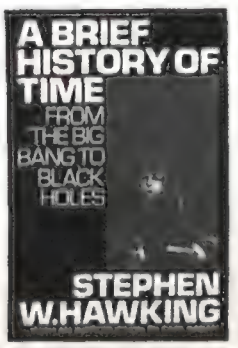

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Rush celebration. In Guthrie, 100 years to the day after the Land Rush of '89, a town pretty much built on stolen ground put on a fabulous birthday party for itself, full of parades and baton twirlers and dignitaries: the Chairman of the Joint Chiefs of Staff, various U.S. and State Senators; old Packards and Studebakers and Kaisers; Shriners perched on tiny cars that zipped around in the streets like June bugs; a state auditor being drawn along, frugality-fashion, in a donkey cart; even a wagon train from Kansas that trekked over fields and trails. A dozen bands with a dozen choruses trumpeted out, "We know we belong to the land, and the land we belong to is grand."

Late that night, the Blue Belle Saloon (Tom Mix's old bar) hosted Billy Bob and the Embryo Transfer, better known as the Bovine Band, along with Byron Berline, the world-champion fiddler. Their music flowed out into the streets and filled the air; Berline's fiddle set sail across the plains. Somebody sang from Woody Guthrie:

> I've sung this song,
> but I'll sing it again,
> of the place that I lived
> on the wild, windy plains.
> In the month called April,
> the county called Gray. . . .

It surely makes an anthem for Mina and Lee Patterson. And, sadly, for the Indian nations soon to be done out of their land in Oklahoma—a word that means "Red People" in Choctaw.

There were, of course, all sorts of raw and commercial reasons, now troubling to the rational conscience, for the Government's breaking its word to them again, and again robbing them. But at the time there were also reasons that might be called philosophical. And in retrospect these are perhaps even more chilling. One is described in historian Angie Debo's book *And Still the Waters Run*:

"In 1883 a small group of Eastern humanitarians began to meet annually at Lake Mohonk, where with an agreeable background of natural beauty, congenial companionship, and crusading motive, they discussed the Indian problem. Senator Henry L. Dawes of Massachusetts, a distinguished Indian theorist, gave a glowing description of a visit of inspection he had recently made to the Indian Territory. The most partisan Indian would hardly have painted such an idealized picture . . . but . . . the Senator advocated a change . . . because the Indians held the wrong principles of property ownership. Apparently speaking of the Cherokees, he said: 'The head chief told us that there was not a family in that whole nation that had not a home of its own. There was not a pauper in that nation, and the nation did not owe a dollar. It built its own capitol . . . and it built its schools and its hospitals. Yet the defect of the system was apparent. They have got as far as they can go, because they own their land in common. . . . there is no enterprise to make your home any better than that of your neighbors. There is no selfishness, which is at the bottom of civilization. Till this people will consent to give up their lands, and divide them among their citizens so that each can own the land he cultivates, they will not make much more progress.'"

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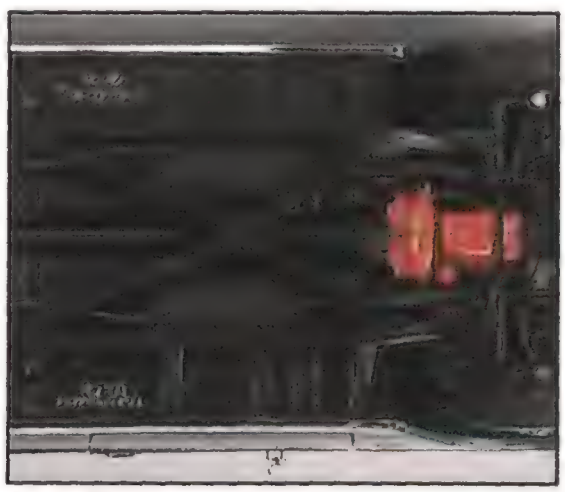

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GRAMERCY P
34

By Donald Dale Jackson

Elevating thoughts from Elisha Otis and fellow uplifters

Hoisting contrivances had been in use for centuries when Otis invented a safety device that helped make vertical cities possible

High point of medieval passion, c. 1420, had passed when lady lowered her lover using a rope and basket.

The tall man aboard the platform that slowly ascended above the goggle-eyed audience at New York's Crystal Palace fair that May day in 1854 was making what was probably his first and last excursion into showmanship. A figure of unassailable dignity in his top hat and dark, rectangular beard trimmed level as a snow shovel, Elisha Graves Otis was no huckster like fair manager P. T. Barnum. He was, rather, a classic Yankee tinkerer, a Vermont-born mechanical virtuoso who was forever coming up with wondrous new gadgets. He was demonstrating his latest.

The 42-year-old Otis looked composed as he stood on the platform, which rose relentlessly upward, hauled by a rope winding around a power-driven drum. Suddenly he slashed the rope. As the crowd gasped, Otis and the platform dropped a few inches, then settled to a smooth halt. The inventor doffed his hat, announcing, "All safe, gentlemen, all safe."

Otis' term for the mechanism he had invented two years earlier was an "improvement in hoisting apparatus." He had not created the first lifting device, to be sure—freight elevators had been around for some 20 years, and hoists of one kind or another go back to Archimedes in ancient Greece and before that even to the pyramid builders in Egypt. But Otis had devised a *safe* way to carry freight—and freight handlers—a way that would soon benefit general passengers as well.

The various and often-imaginative hoisting contrivances built previously—a "flying chair" lifted by a rope was installed at the palace of Versailles by Louis XV for Madame de Pompadour—tended to share a frequently fatal flaw: if the rope broke they dropped like a stone. Otis' solution was a wagon spring that was mounted atop the platform and remained taut while the platform was in motion. If the rope snapped, the ends of the steel spring would flare out, forcing two large latches to lock into ratchets on the vertical guide rails on either side of the platform.

Otis had hit on the safety-device principle two years before while puzzling out a way to lift equipment safely in the Yonkers, New York, bedstead factory where he worked as a master mechanic. His problem-solving style was practical and direct; his son Charles said that he preferred to work things out in his head rather than on paper. Otis had been thinking about joining the gold seekers in California when, in 1853,

Pair of vanishing breeds: operator Raymond Camilleri runs Gramercy's 1883 Otis, dubbed "The Dowager."

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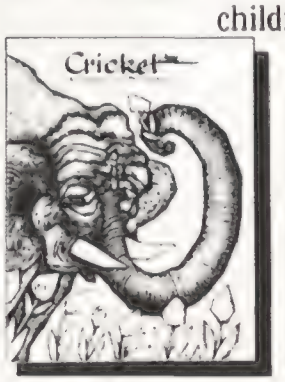

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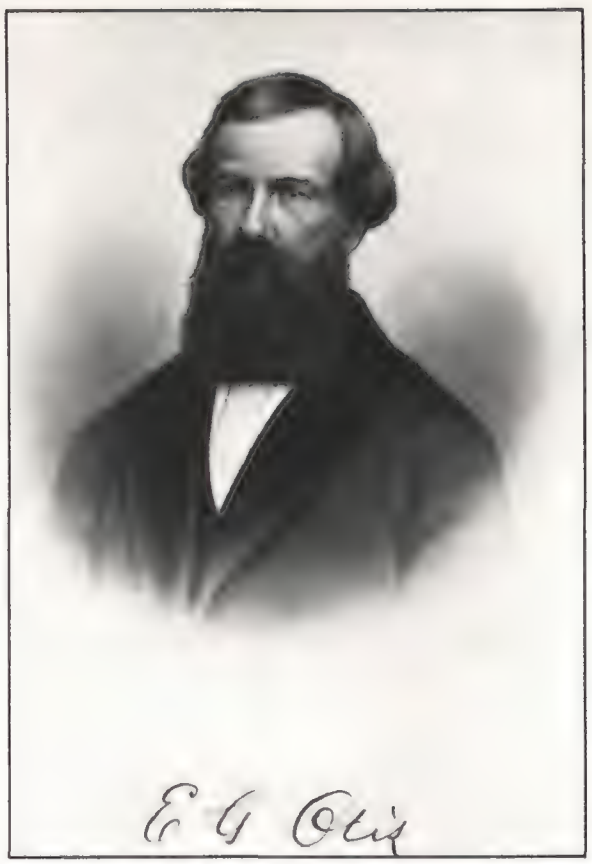


Elisha Otis' safety mechanism heralded other advances in elevator technology.

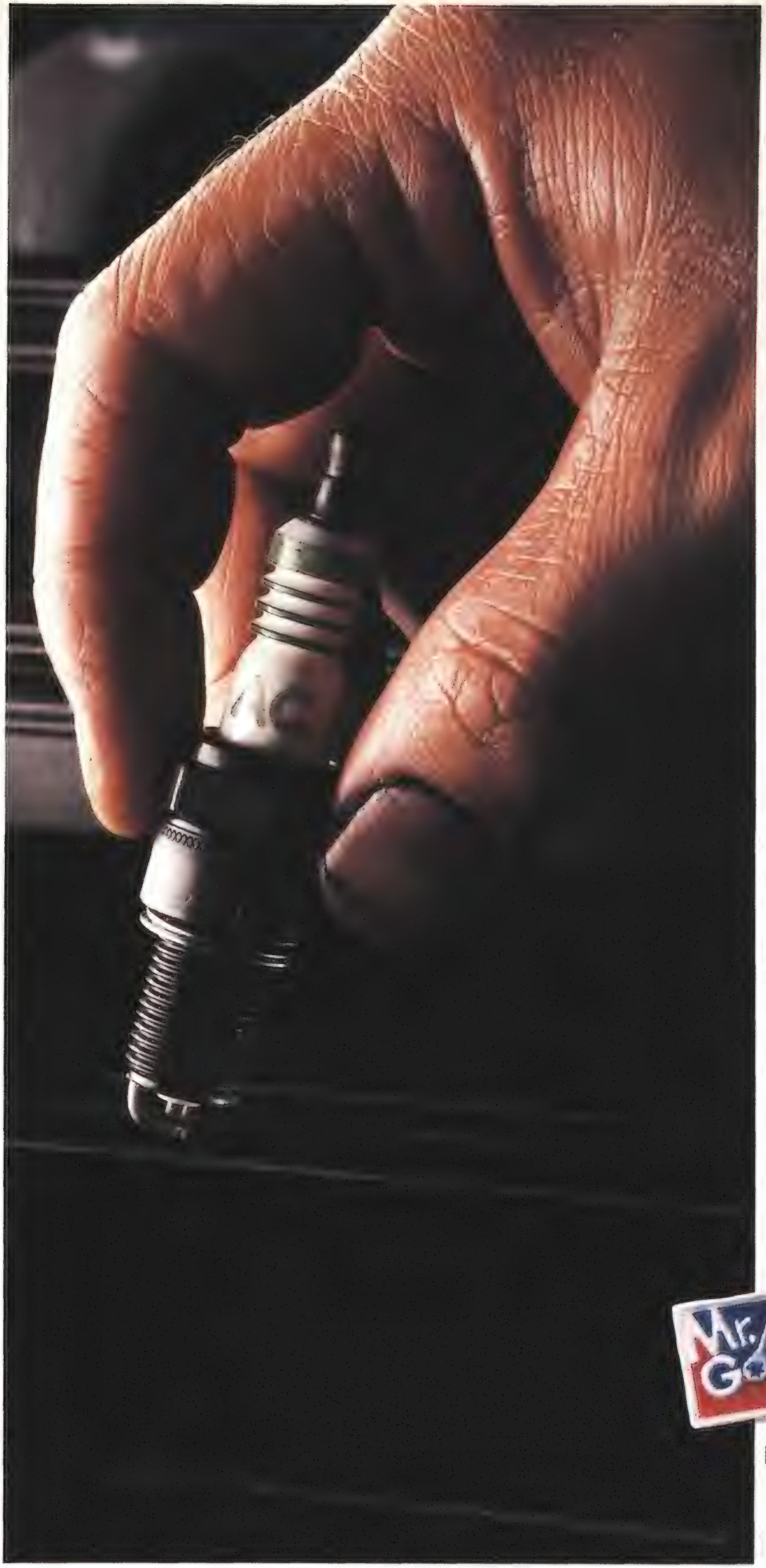
two New York City factories asked him to build freight elevators for their shops. To fill their orders (at $300 apiece) he launched his own company.

Otis thought he had designed a safe hoisting mechanism that would mainly benefit mills, factories and warehouses, but he had done far more. An elevator that could safely haul freight could transport people as well; the fledgling company installed the first passenger elevator in a five-story china and glassware store in downtown New York in 1857. Commercial buildings could now rise higher and thus increase their space without occupying more precious real estate. Prior to the safety elevator, a history of New York architecture says, "the economic line was generally drawn at the fourth floor"; people declined to climb much higher. But with elevators, buildings could be as many as ten stories high (a limit imposed in those years both by the amount of cable a winding drum could handle and by construction techniques). Otis' invention and other improvements in elevator technology would ultimately transform the face of the urban world: they would create vertical cities. Combined with the development of metal building skeletons, the elevator made possible the soaring, dramatic skylines that have come to exemplify the 20th century.

In the months that followed the Crystal Palace show, however, the elevator business inched slowly upward at a pace comparable to the 40-feet-per-minute climbing speed of its product—sales totaled $2,975 in 1854 and $5,605 in 1855. They spurted to $13,488 in 1856. Young Charles Otis fretted in his journal about his father's slim endowments as a businessman. Whenever profits picked up, he wrote in 1858, "Father will manage in such a way as to lose it all," sometimes, he added, by going "crazy over some wild fancy for the future."

The senior Otis, sadly, didn't live long enough to become the grandee that his momentous invention would likely have made him. On April 8, 1861, four days before Confederate guns bombarded Fort Sumter, he died at 49 of what the Otis family geneal-

An 1860s demonstration shows hoisting-rope failure and "All safe" protection.



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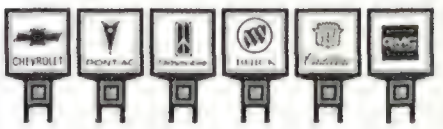

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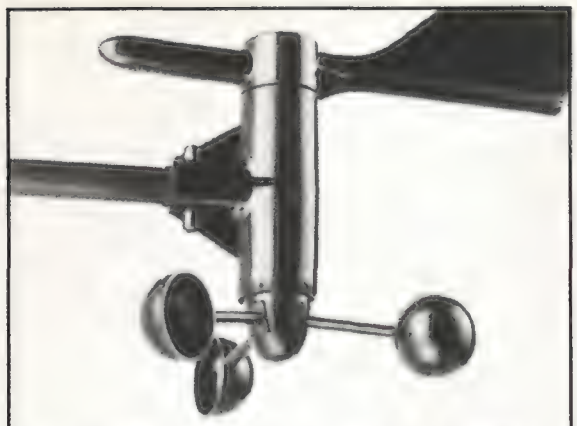

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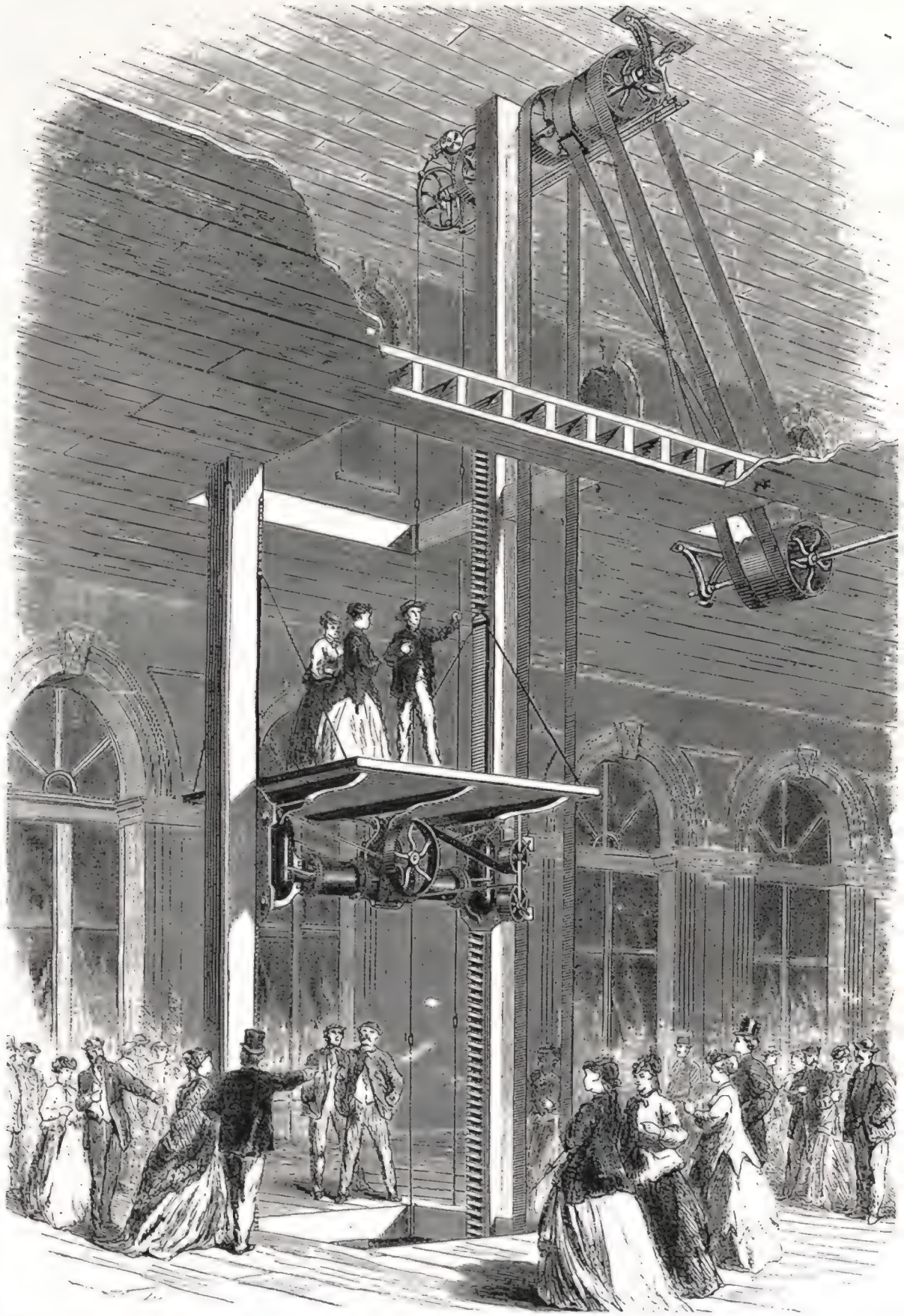

Miller's Patent Screw Hoisting Machine was one of several such types made. It was often steam driven and its screw-and-cog gearing wore out readily.

ogy describes as "nervous depression and diphtheria." He left an estate of $5,000 and debts of $8,200. His sons, Charles and Norton, took over the business, which became known as Otis Brothers & Company.

In the 1860s they built a new factory in Yonkers, sharing in the flush times that followed the war. Sales reached $208,900 in 1870, and by 1873, after 20 years in business, the company had installed 2,000 elevators in residential and commercial buildings. The once-disdained upper floors of hotels were now the most desirable, since, as an 1869 Otis catalog explained, guests could "make the transit with ease and celerity" to eminences

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where they enjoyed "an exemption from noise, dust and exhalations of every kind." At the Yonkers plant, the work went on "from Monday morning to Saturday night, with two entire sets of hands, working day and night."

Many early elevators were powered by steam engines that drove drums around which cables were wrapped, but more imaginative methods soon appeared. A Boston inventor, coincidentally named Otis Tufts, obtained a patent for a lift propelled by a huge rotating screw that ran the length of the shaft, passing through the middle of the car. When one of Tufts' "vertical screw railways" was installed in New York's Fifth Avenue Hotel, a fainthearted editor declared that he was "quite unwilling to be an instrument of proof" for the inventor's safety claims—which turned out to be valid. The even more peculiar "water balance" elevator, dreamed up by Cyrus Baldwin, was driven by a system of cables with a water bucket as counterweight. When the bucket was filled, it dropped and the car rose; when the water was drained out, the bucket rose and the car descended. The screw elevator passed into history early, but a few water-balance lifts were still operating as late as 1906.

In the 1870s, Otis and its competitors had introduced in the United States a major leap upward in tech-

On opening day at New York's Lord & Taylor emporium, 1873, the elevator operator manipulates control rope, thus regulating direction and speed of car.

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nology, the hydraulic elevator. Hydraulic elevators, relying on water pressure instead of steam, were safe and inexpensive to run (they could be hooked to municipal water mains instead of inefficient steam plants). They came in two types. One was driven by a rope-geared piston in a vertical or horizontal cylinder. The other was the direct-plunger type, with a long steel tube, or piston, on which the elevator sat: an influx of water drove the tube and car upward; a decrease in water pressure allowed the car to descend as the tube sank into an underground shaft as deep as the building was high. Hydraulic elevators could reach greater heights, and paralleled the rise of nine- and ten-story buildings in the 1870s.

The last third of the 19th century was the elevator's gilded age. Those that conveyed the carriage trade in the most elegant hotels were chambers of opulence. The lavishly upholstered elevator at Louisville's New Galt House comfortably seated 15. At Congress Hall in Saratoga Springs, New York, the car was "domed overhead, with skylights, ventilators, and chandeliers," lined with sofas on three sides, and paneled in bird's-eye maple, French walnut, rich tulipwood and ebony. A passenger could be pardoned if he wanted to keep riding awhile. The Otis hydraulic elevator in the lobby of the cooperative apartment house at 34 Gramercy Park (New York City's first co-op) was installed in 1883 and is still climbing at a gracious 51 feet per minute today. Mirrored, walnut paneled and equipped with an upholstered bench, it is believed to be the oldest continuously operating Otis passenger elevator in existence (p. 210).

The Washington Monument's original elevator was a steam-powered model installed in 1880 to haul masonry during construction. Converted to passenger duty by 1888 with the addition of wooden seats and an oil stove, it took ten minutes to reach the 500-foot observation level. Otis records for August 1881 contain an entry reading "Hydraulic passenger

Donald Dale Jackson claims to have been trapped on an escalator for 12 hours when rescued by blowtorch.

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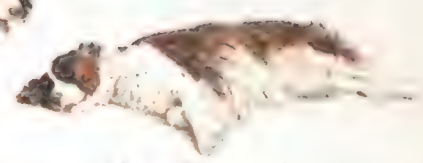
6 am: Sleeping and storing energy.

7 am: Dog needs to utilize energy stored during sleep.

8 am: Eating a balanced breakfast.

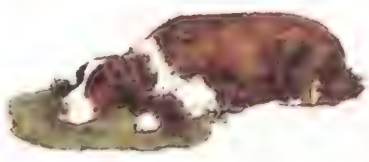
9 am: Requires fats in the diet to provide sustained energy.

10 am: Nature calls. Smaller stool means more nutrients absorbed by dog.

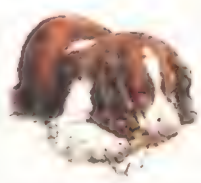


11 am: Tissues rebuild during naptime.

NOON: Vitamins in diet help clear eyes to spot mailman.



1 pm: Recharging batteries while sleeping.

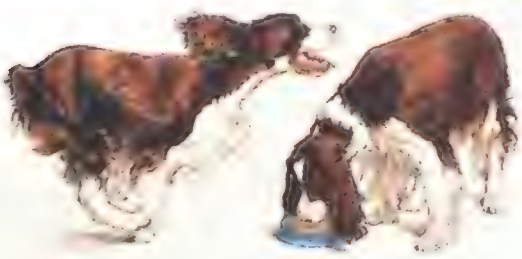


2 pm: A healthy reward: Iams Biscuits.

3 pm: Needs fatty acids and proteins for thick, healthy coat.

4 pm: A pre-dinner nap.

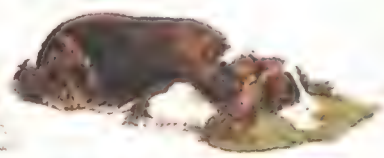
5 pm: Greeting the troops.



6 pm: Needs balance of nutrients and fatty acids to keep nose and footpad leather pliable.

7 pm: Dinner should contain quality meat protein.

8 pm: Energy needs to be kept at optimal level.



9 pm: Nutrients replenish energy while sleeping.

10 pm: Good muscle tone achieved through good nutrition.

11 pm: Provides fiber which aids in proper digestion.

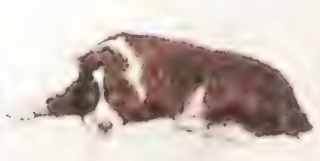
MIDNIGHT: In for the night.

1 am: Most dogs sleep eleven hours a day.

2 am: Nutrients repair muscles during sleep.

3 am: House patrol.

4 am: Proper diet provides amino acids and minerals for bone growth.



5 am: Let sleeping dogs lie.

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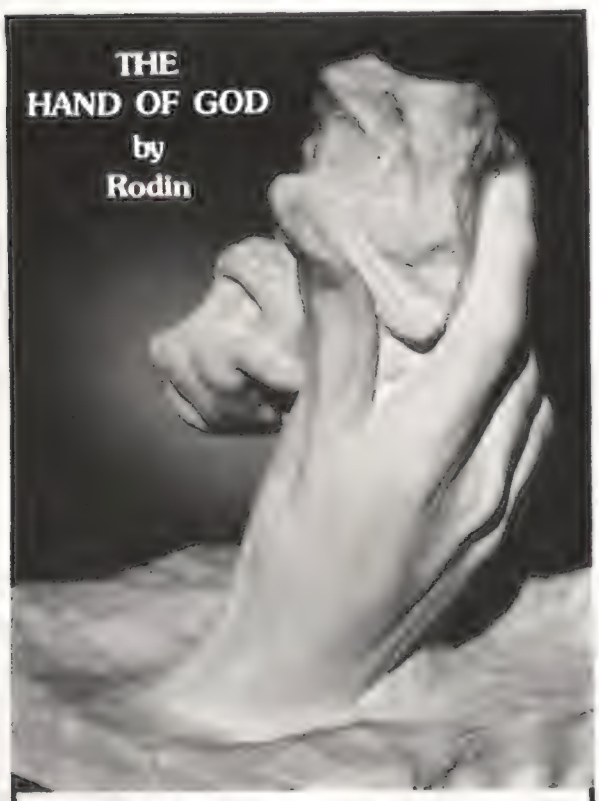

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elevator ordered for the U.S. Capitol, Washington"; a month later, a similar one was ordered for the White House.

When the White House elevator was replaced in 1902, the President was Theodore Roosevelt. His sons Kermit and Theodore jr. discovered that, by operating the controls of the new machine, they could make the building's lights blink, which they liked to do during state banquets. Calvin Coolidge is said to have objected when it was later proposed to raise the top speed of the executive mansion elevator from 75 feet per minute to 250. Silent Cal, it seemed, liked to ride alone while his Secret Service escorts scampered up the stairs, and he didn't want to outstrip them. He compromised on 100 feet per minute.

Otis built the elevators for the slanted legs of the Eiffel Tower, between the ground and the second platforms, when no French company bid for the job. Elevatoring the tower, which was completed in 1889, proved diplomatically as well as mechanically trying. Franco-American debates over safety devices and other details became so heated that Otis twice threatened to pull out. "If there is to be a war," Charles Otis wrote to tower designer Gustave Eiffel at one point, "[we] propose that at least part of it shall be fought on American ground."

Otis ads in the 1890s suggested that the luxury of a private-home elevator was now within the reach of many Americans. "A $20,000 house without an elevator would have been the usual thing a few years ago," one ad noted, "but times have changed." The day was dawning when "all houses of any pretension" would have their own elevators, with basketwork doors and push-button controls a child could operate. Benefits to the elderly were stressed: "Now Grandma—no more stair climbing."

Urban America was by this time inexorably on the rise. In the 1880s, several architects in New York and Chicago were pioneering the use of iron- and steel-framing techniques; prior to that, a structure's height was effectively limited by the thick, cumbersome masonry needed to support tall buildings.

Elevator technology kept pace with the builders by developing an efficient electrical power system. The advent of the gearless traction design, in 1904, was a major refinement in the succession of innovations that had be-

Elevator etiquette may have been a casualty of war by 1945, when Eddie Bracken got scrunched by two shoppers in film *Hold That Blonde!*

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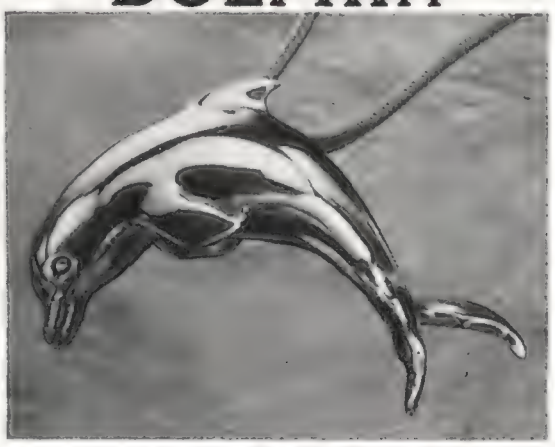

Elizabeth Allen Tuttie, noted artist and jewelry designer, has miraculously captured the graceful ballet of the Dolphin. The solid sterling silver Dolphin comes complete with a 20" sterling silver chain, polishing cloth, and leather pouch. Length: 42mm $95, plus $2.50 shipping. **The Dolphin will be shipped in 24 hours. Visa/MC/AmEx/Check.** ©Elizabeth Allen Tuttie.

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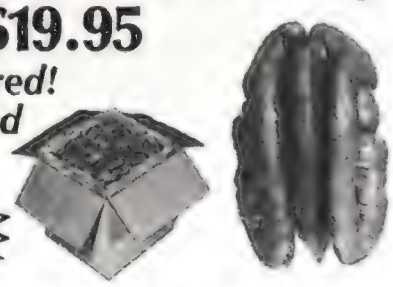

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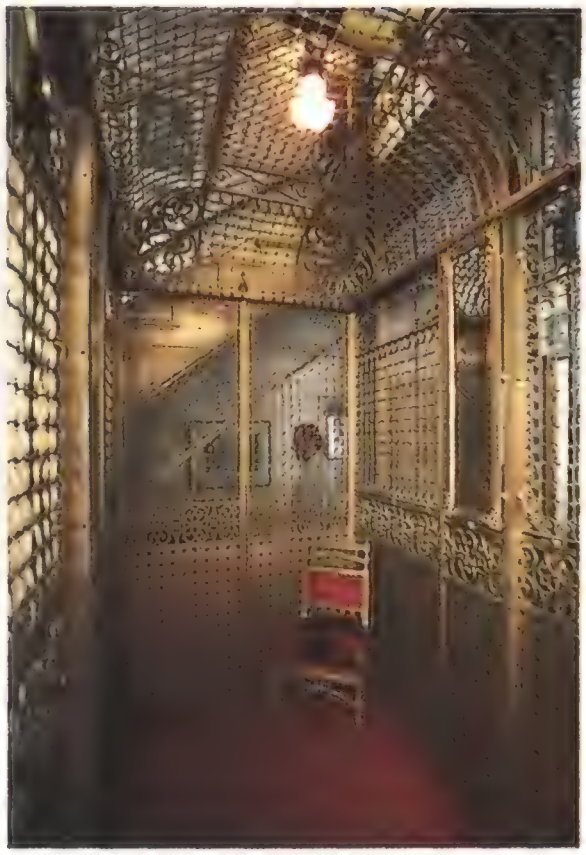

Lavish "birdcage" elevator, an 1897 Otis, graces lobby of New England inn.

gun with Elisha Otis' "All safe" device a half-century earlier. This traction design remains essentially unchanged today. Cables run over a grooved pulley, or sheave, on the motor shaft, attached at one end to the car and at the other to a counterweight. Turning in one direction, the motor raises the car; in reverse, the car is lowered. Hydraulic elevators were thereafter destined for low-rise assignments, where they remain a cheaper, popular alternative to electric units.

Yet another way of avoiding stairs emerged in 1900 at the Paris Exposition, where the Otis Escalator made its public bow. The idea went back at least to 1859, when a U.S. patent was granted for a triangular moving stairway that passengers could ride to or from the apex and then hop off. That version was never built, but by the turn of the century there were two competing models. One was a cleated belt that eased riders off with a tapered metal comb that passed between the cleats, while the other was the now-familiar stair-step style, but with an awkward sideways exit. Charles D. Seeberger, who developed

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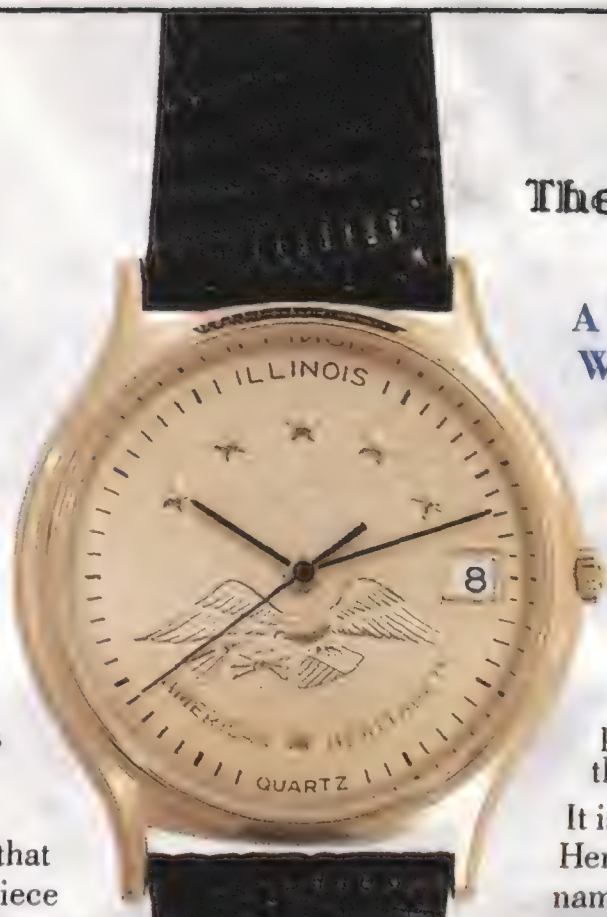

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the latter type and coined the name (from the French *escalader*, "to climb"), sold his patents and trademark to Otis ("Escalator" remained an Otis trademark until 1950).

Early escalators in the Boston and London subways employed uniformed "catchers," people assigned to help those who teetered in uncertainty or tried leaping to safety at the exits. Signs in London advised riders to "Please step off on the left foot," but a local writer elected to keep both feet on level ground: "The sight of all those stairs gravely walking upstairs for ever and ever," he wrote, ". . . is a thing to be avoided by one of uncertain or unsteady vision." Escalators remained relatively awkward until Otis combined the best features of several models, in the early 1920s, and unveiled the version we know today.

The 60-story Woolworth Building, the world's tallest when it was finished in 1913, boasted 26 state-of-the-art electric elevators and reportedly required an upward revision in New York City's elevator speed limit to permit velocities of 700 feet per minute. Meanwhile, the company sometimes called "Uncle Otis" by its employees continued to tinker: a new self-leveling mechanism automatically stopped a car exactly at floor level rather than a few inches north or south of it; a push-button system, launched in 1924, meant that operators no longer controlled speed or stops—for them, the handwriting was already on the elevator wall. The vertical speed limit had to be amended again in 1931 with the completion of the Empire State Building: 1,250 feet high, 73 elevators whooshing up and down at 1,200 feet per minute, more than 120 miles of cables (still called "ropes" by elevator people). For the moment at least, Otis' wondrous machine seemed to have gone about as far as it could go.

Relations between people and elevators over the years have been, well, up and down. As early as 1890 *Scientific American* blamed elevators for

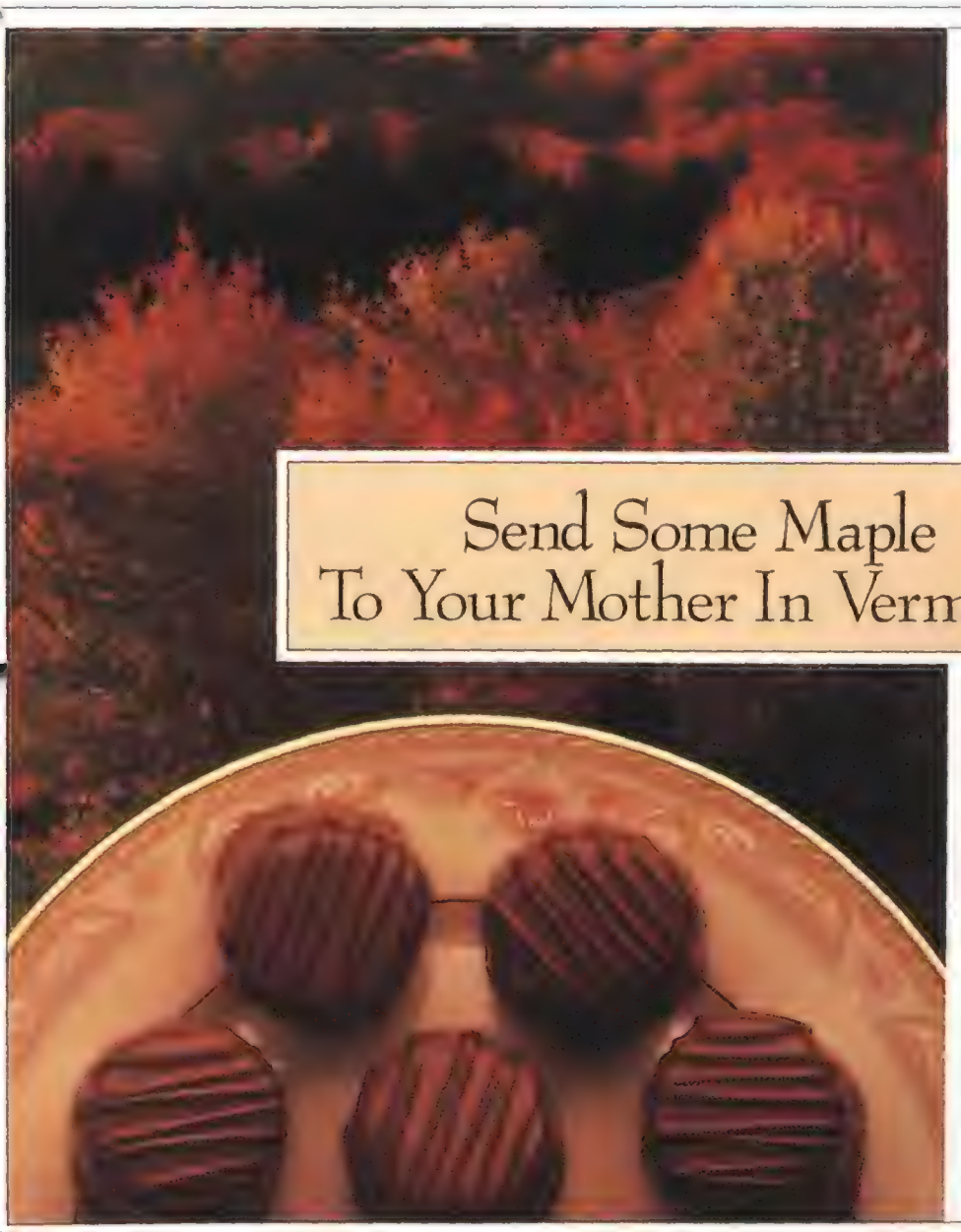
a disease allegedly caused by quick stops, in which certain body parts stopped faster than others; the recommended prevention was to press head and shoulders tightly against an elevator wall during the stops. And one turn-of-the-century journal solemnly reported, without evidence, that deaths from "elevator sickness" were widespread.

Many people are uneasy riders even today. We are traveling, after all, in a fast-moving sealed box, often at high elevations, propelled by machinery that is largely invisible. We lack reference points and familiar stimuli (an elevator is what psychologists call a "partial sensory deprivation chamber"). This can affect our actions in peculiar ways.

We become elaborately polite in elevators and squirm at the forced intimacy. We do everything short of turning cartwheels to avoid eye contact (an Otis man calls this condition "Otisitis"). The strained, unnatural behavior, according to *New York* magazine, begins even before the elevator is boarded, when several strangers assemble and take turns unnecessarily pushing the call button. One impatient man explained this action by saying he wasn't "going to ride on someone else's push." Otis engineers calculate the impatience threshold of people waiting for an elevator at roughly 30 seconds in an office building, 40 in a hotel and 60 in an apartment house. Studies have found that the first spaces people occupy after getting on are the front corners by the buttons or the rear corners.

Elevator phobias—fear of falling, of suffering a shortage of air, of being trapped or of being vulnerable to crime—are painfully real. Dr. Manuel D. Zane of White Plains, New York, who directs a local phobia clinic, says that elevator fears are "more widespread than anyone realizes." Zane, a psychiatrist, says that many phobics become physically ill in elevators. "They're afraid something bad will happen. It could stem from something they heard or read, not necessarily a personal experience," although an industry study has found that young children, in particular, may be more easily traumatized by crowded elevators—the darkness at the child's eye level, the odors, the sensation of being crushed. Therapists show people how to calm their fears "by counting backward, taking deep breaths, reading, talking and in other ways," Zane says.

Otis people state that elevators are safer than any form of horizontal transportation, safer even than stairs, but of course it's the exceptions we remember. When an Army B-25 crashed into the Empire State Building at the 78th and 79th floors in 1945, the *New York Times* reported that the cables of two elevators were damaged, sending the cars—one empty and one



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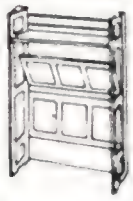
2. Slides open on hinges 
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bearing two women—plunging to the subbasement (the women survived). People as various as Henry Kissinger, New York's Mayor Edward Koch, a carload of prisoners and guards at a Manhattan courthouse, and half the chorus of the Metropolitan Opera have been trapped in elevators for uncomfortable interludes (the singers missed the last act). A woman in Chicago was trapped for five days and nights in a private elevator so small that she couldn't sit down.

Statistics on deaths and injuries in elevator-related accidents are hard to come by. Some of the victims are teenagers who joyride atop the cars and counterweights in public housing projects, where elevator crime is also most prevalent. "All kinds of crimes are committed in elevators," says Chief William Conroy of the New York City Police Department's Brooklyn North Patrol Division, "robberies and sex crimes and harassment, and the projects are the worst." Crime in moving chambers occurs in high-rent districts, too: a man was recently charged with a string of attacks on lone women accosted in the elevators of Rockefeller Center and nearby buildings.

But the scenes played out on eleva-

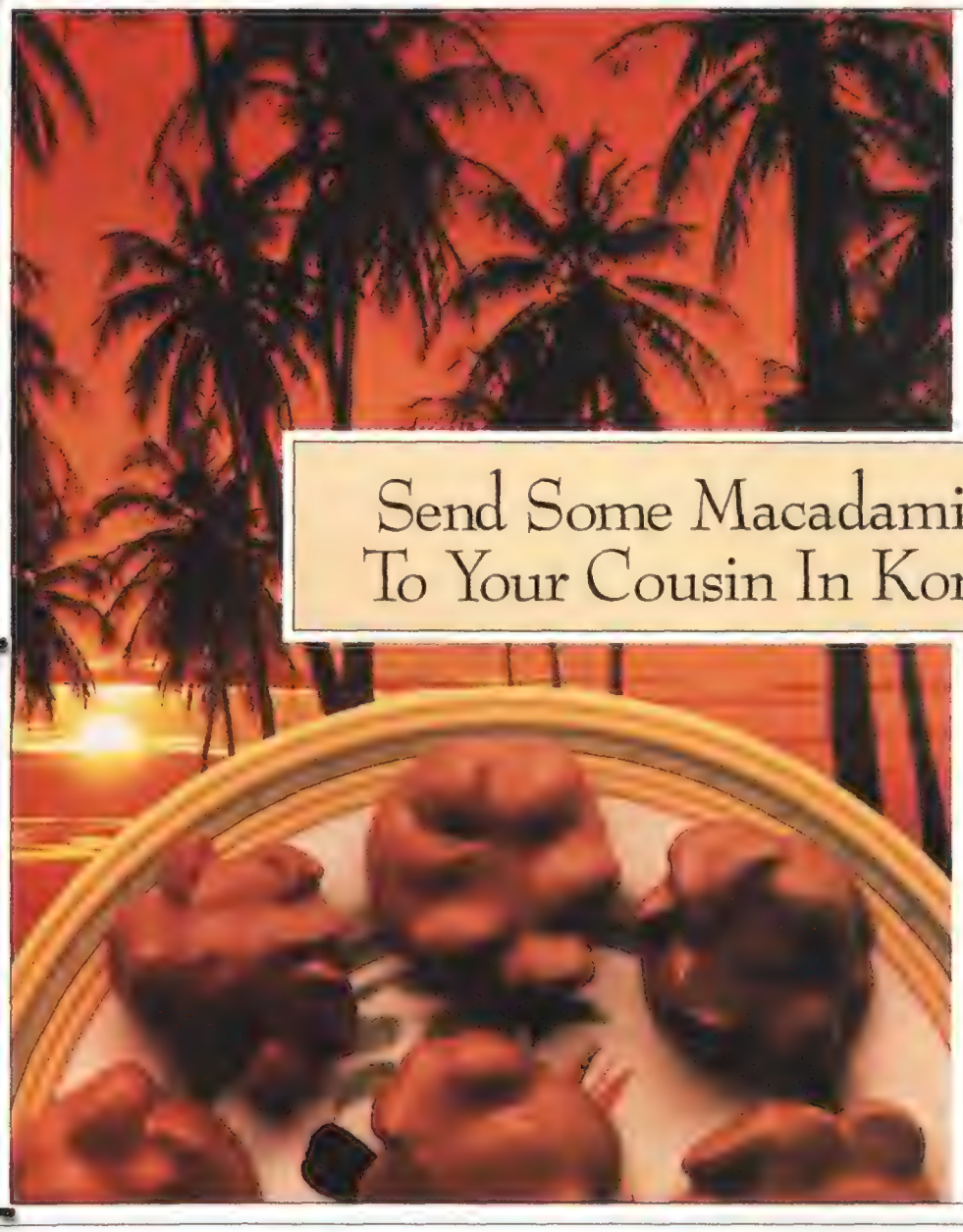
Katharine Hepburn rides her home elevator in *Suddenly, Last Summer.*

tors can be comic as well as tragic. The always-perplexing question of elevator etiquette, for example, was addressed in guidelines issued by Otis in 1949. "Ladies first" was out—you leave in order—don't shuffle awkwardly while the women in back shoulder their way to the front. Watch the elbows, gestures, umbrellas and packages. Face front so you'll know when you reach your floor. And leave your hat on. Hats were apparently a burning issue in the 1930s, when a newsman asked President Franklin D. Roosevelt if he was a member of APTOHE (the Association for the Prevention of Taking Off Hats in Elevators), prompting a woman reporter to mention SPLWEBGTOHE (the Society for the Protection of Ladies Whose Eyes Have Been Blacked by Gentlemen Taking Off Hats in Elevators). FDR reputedly chuckled and threatened to put both of the organizations under federal regulation.

Odd events often transpire in elevators. The Port of New York Authority staged a banquet for 60 people in one of its four 17-by-34-foot freight elevators in 1933. The head of a Czech shoe-manufacturing firm set up his office—secretaries, files and all—in an elevator in his plant, enabling the boss to be nearly everywhere at once. Actor Jack Lemmon, born in an elevator in a Boston hospital, is one of many elevator babies; the parents of an infant born in a Chattanooga hospital elevator objected when they were billed for a delivery room anyway. At precisely 11 A.M. and 5 P.M. daily in the 13-story Peabody Hotel in Memphis, five ducks ride the elevator between their rooftop quarters and a fountain in the lobby, accompanied by a "duck keeper" who handles the button pushing. The Peabody duck walk (p. 231), which frequently draws a crowd, has been a tradition for some 50 years.

Elevators have figured in hundreds of movies (one even starred in a 1985 Dutch film called *The Lift*), in children's books and in stories by such authors as Arthur Conan Doyle and John Cheever. Otis house organs over the years have faithfully chronicled what may optimistically be described as elevator humor. In 1912: woman enters hotel lobby, steps into phone booth and waits five minutes; guess what she thought it was? In 1953: woman boards crowded elevator, but her husband doesn't make it. She says "I want to go down with my husband"; voice from the rear says, "Lady, this is an elevator, not the *Titanic*."

Operators were still common enough in the early 1930s to rate an official safety code with a 23-point instruction sheet ("Make a trial inspection trip each morning. . . . Stop before reversing"), but by the '40s they were beginning a long, slow descent into near extinction. They were twitted



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for their delivery ("Messy, lazy suzy drezzy" for "Mezzanine, ladies' suits and dresses"), but they were affected more seriously by World War II labor shortages and, in 1950, by the arrival of the first fully automatic elevator systems in office buildings.

A 1957 industry brochure boasted about the "continued elimination of the human element," but it turned out that not everyone shared that opinion of the human element. Operators provided a personal touch: they exchanged chitchat with regular passengers, they made people feel safer. Tenants in one Manhattan apartment house petitioned for their reinstatement after a series of burglaries. A study noted that operatorless rides, with no one in charge and no one to offer reassurance in an emergency, could make people uneasy. The operator corps nonetheless continued to dwindle. Today only a few members of the vanishing breed remain in scattered stores, hotels and other buildings to field the perennial question about the job's ups and downs.

Do-it-yourself commercial elevators were the first in a succession of technological and esthetic advances during the elevator's past half-century. Glass-walled chambers now swoop up and down the outsides (and insides) of buildings, and double-deck units stop at two floors simultaneously. Today's computerized elevators are so savvy that they can "learn" where to dispatch themselves by studying a building's traffic patterns. Some talk to us, others have video screens that display building information.

One aim of the displays and electronic conversation is to take our minds off the old bind: we're still stuck in this speeding box, without any points of reference. Glass elevators, which permit us to keep our eyes on familiar reference points, may help a little, but anxiety is a constant in the elevator game.

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sands in the great blackout that struck the Northeast in November 1965. Workmen hacked through shaft walls to rescue 14 people marooned for up to seven hours in three elevators in New York's 59-story Pan Am Building. Ten men and three women trapped in an Empire State Building elevator for 6½ hours told jokes, played word games and eventually climbed out by way of a ladder dropped through the ceiling. Tourists stranded in the building's 86th floor observatory staged an impromptu concert: French sightseers chorused "La Marseillaise," Southerners sang "Dixie" and an improvised barbershop quartet crooned "Sweet Adeline" to pass the time.

If anxiety is one elevator constant, Otis is another. The company dominates the industry, though the tab for an elevator has risen from the $300 Elisha Otis asked to $300,000-500,000 for a 1989 high-tech model. A division of United Technologies Corporation since 1975, Otis nudges the frontiers of elevator technology nowadays in a stark, 29-story test tower that ascends incongruously from the

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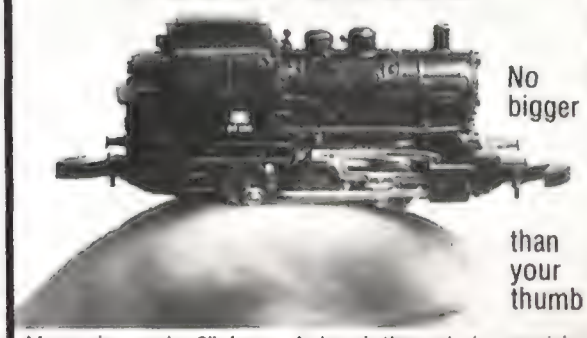

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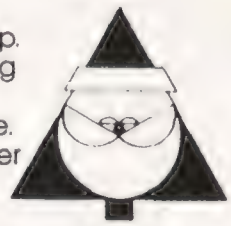

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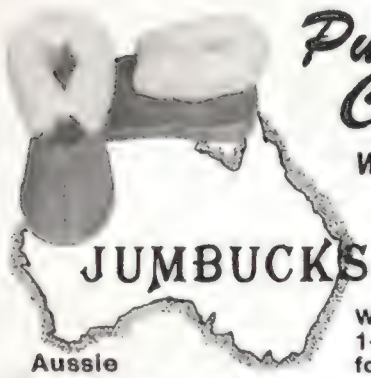

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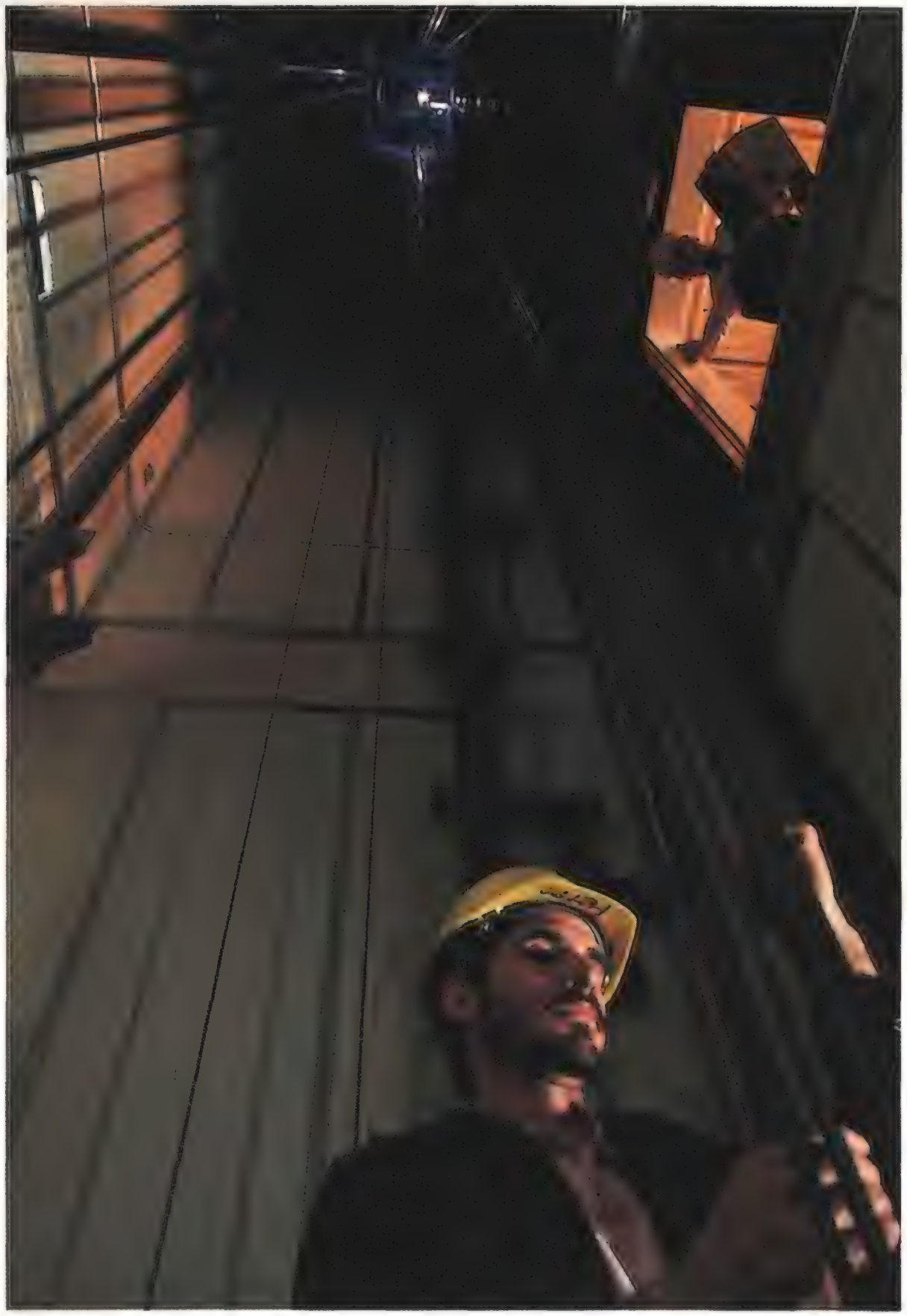

In a hoistway in 29-story Otis research tower, engineers examine elevator cables being tested for fatigue. Escalator technology is also checked here.

bucolic New England countryside in Bristol, Connecticut.

Obelisklike and nearly windowless, the tower is the highest of seven that Otis maintains around the world, including one in China. Its 11 hoistways are vertical boulevards to nowhere (above), since the floors are largely empty or occupied by machinery and a few engineers. Current research at the tower is aimed at producing a smoother ride (through a pendulum suspension system the company calls "Luxury Ride") and adapting modern control systems to older elevators. Engineers are also refining new audio and video-display systems for big-ticket elevators.

One of the rarest, most tender scenes in nature...

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BY KATSUMI ITO

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V28

A scale model of a helical, or spiral, escalator in the tower is a throwback to a turn-of-the-century notion. "The first designs for a spiral escalator were done in the early 1900s," says Mert Meeker, retired Otis engineer and technical marketing director, "but they were never built. Now we've come back to them and we're planning to manufacture one."

What, besides the sky, is the elevator's limit? In Tokyo's Sunshine 60 Building the cars hurtle 2,000 feet a minute. "That's probably as much vertical speed as most people can tolerate," Meeker says. "You feel the pressure change in your ears at that speed and it takes 10 to 15 floors to stop the car. What you feel in your stomach is the G force when the elevator accelerates and decelerates. The industry is agreed that an acceleration of four feet per second squared (one-eighth G) is as much as people will comfortably take."

How about height? The Sears Tower at 1,454 feet and the World Trade Center at 1,350 are the current highest achievers. For their passenger elevators, both buildings have intermediate "sky lobbies," which save "core space" by running some elevators "stacked" in different segments of the same shafts. "In theory there's no limit to how high an elevator system can go," Meeker explains. "One architect designed a half-mile-high building. That would really push the core space, even with sky lobbies. The mass of cables necessary could also be a limiting factor, but all we'd have to do is dream up a way to run an elevator without a counterweight and cables." Meeker thinks a moment. "It could be done, though," he says. "If anybody wants a 200-story building, we'll figure out a way to do it." That's what Elisha Otis would have done.

Experiencing *Rainbow Pass*, a sound-and-light installation in Coral Gables, Florida, riders in elevator at right are bathed in music and colors. Artist Christopher Janney's work would have wowed the early tinkerers.

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Book reviews

Safari: A Chronicle of Adventure
Bartle Bull
Viking, $40

An East India Company botanist named William Burchell, jilted by his fiancée, invented the African safari in 1811. He had a wagon built, stuffed it with beads, tobacco, copper sheets and blue-checked handkerchiefs, not to mention six muskets and four barrels of gunpowder, and headed into Hottentot country. He was away four years. His goal was botanical exploration, not trophy hunting, but his expedition inspired the first hunting safari.

A century later, in the golden age of the safari, you would find the Duke and Duchess of Connaught hunting elephant and lion, accompanied by a lady-in-waiting, an equerry, 25 field personnel, 4 cooks and a baker, 15 grooms with their leader. For this "simple camp life," dinner might consist of "buffalo-tail soup followed by fresh barbel as the fish, proceeding through mutton cutlets with vegetables, roast guinea-fowl, stewed apples, and giraffe marrow-bones as a savory, followed by cheese and coffee. Reportedly wines and spirits were taken only in moderation, and brandy and champagne were kept in reserve as medicine."

Bartle Bull's elegant and fascinating book is indeed a chronicle of adventure, tracing the safari tradition from its pioneer days of solitary, woman-shy trekkers with muzzle-loaders through many successive stages involving, in turn, high-powered guns, women, cars, political change, airplanes and the conservation movement.

Bull himself, a third-generation student of Africa, former boy hunter and veteran bush hiker, has not shot game since 1967. Nevertheless, this is above all a hunter's book, with its almost obsessive recounting of kills, dangerous misses and spectacular escapes, its loving descriptions of Purdey guns, its unsentimental rhapsodies about the wild animals themselves.

A hunter friend of mine once sighed, "Oh, I love geese, and I love to kill them." That pretty well sums up the basic esthetic here. Once the reader accepts it, the book is a treasure, not only for its gripping excitement but for its wonderfully exotic information.

You want to skin an elephant? It's all here in one absolutely riveting page, the carcass reduced at last "to a parcel 6x5x2 feet and sewn up in calico dipped in arsenic to keep out rats and insects."

You want to read game trails? "A flattened blade of grass . . . requires three hours to pull itself erect. Its intermediate angles, allowing for variables, can be read like the hands of a clock. But the sharp hooves of buffalo cut the grass, instead of pressing it down as an elephant does."

Bartle covers it all, from Teddy Roosevelt's safari to Martin and Osa Johnson (SMITHSONIAN, November 1986) to Hemingway, from Isak Dinesen to Ava Gardner, from the great bush films like *Mogambo* and *King Solomon's Mines* to the tragic present day: the politicking, the poachers, the terrible destruction of elephants (their numbers in East Africa are estimated to be dropping 7.5 percent a year) and of numerous other beautiful wild things.

The pictures say it another way. There are magnificent vistas, panoramas of the great herds, vintage photographs of crusty old hunters, action shots of people being mauled by lions and, inevitably, the souvenir lineups of clients with their day's bag.

Though the safari of old is long gone now, African nations attempt to control the situation with a system of licenses. Tanzania has licensed ten hunting concessions, charging fees such as $110 for a hyena and $1,165 for a lion or leopard, plus royalties of $376 per day for each hunter and $53 for each nonshooter.

There is more to it than killing, of course. As one modern-day guide confided, "What I really love about it are the early mornings and the late evenings. The bloody sounds. The smells. The cloud formations. There's something different every day. I love the trees. I love the birds. The calmness. Being away from homo sapiens himself. The hunting and shooting is just a sideline. It's being out there."

Michael Kernan
Washington, D.C. writer

Hunter and artist Cornwallis Harris planned his first hunting safari in 1836.

The American Crow and the Common Raven
Lawrence Kilham
Texas A&M University Press, $29.50

Lawrence Kilham has been a distinguished microbiologist and ornithologist for about 50 years. He writes that in these seemingly disparate fields his research interests and methods have been very similar.

"I have always shunned the idea, whether with birds or viruses, of starting with a hypothetical problem and sticking to it. . . . Whether working with viruses or birds, I like to work with a minimum of apparatus. . . . Observing is a full-time occupation. You have to have your mind on what you are doing. . . .

"To me, statistics, when used as a 'must,' are as much of a drag on observations of the kind that I like to make as is the use of a camera or a tape recorder. If one concentrates on producing a statistically sound publication, one may overlook much of what the birds are doing."

This attitude explains why Kilham feels "simple narration, or an anecdotal style, is the soundest way of presenting how animals live."

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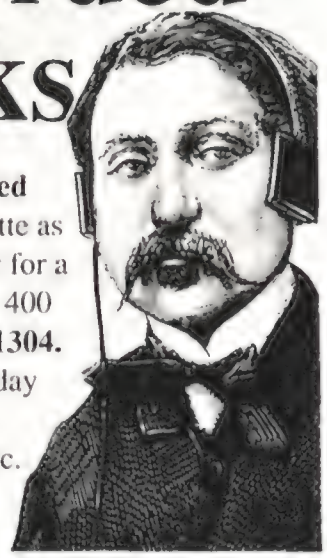

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All of which is quite contrary to the hard, high-tech approach now favored by many professionals and often popularly associated with "real" science. "The most widely accepted or behaviorist view," remarks Kilham, "is that birds and animals are not much more than mechanical robots and that most everything we need to know about them can be established scientifically, by quantification and statistics."

A quiet, diffident writer—winner of the prestigious John Burroughs Medal for outstanding natural history commentary—Kilham notes that quantification may serve the purposes of others. However, it has not much interested or aided him in the search for the "hidden presence" (individual character and collective culture) of crows, ravens and other animals.

In 1981 Kilham and his wife, Jane, came upon an isolated section of a Florida cattle ranch inhabited by a stable crow community comprising several territorial groups, or extended families. These birds had been little disturbed by people, and the couple did not try to trap, band or put radio transmitters on them. It is the Kilhams' belief that hands-on research, no matter how carefully conducted, often results in physical and psychic injury, and invariably distorts the behavior of birds and mammals. "If one wishes to understand any animal that is intelligent, sensitive, and capable of conscious thought, it is imperative, I think, to study it in its fearless state."

By unobtrusively watching crows for some 8,000 hours (on the ranch in Florida, and in New Hampshire), the Kilhams came to know individual birds by their idiosyncracies of physique, plumage and behavior. So respectfully approached, the crows went about their regular business and apparently concluded that the man and woman were eccentric but essentially harmless, occasionally benign, creatures.

Each of the territorial groups Lawrence and Jane Kilham watched included a mated pair and three to seven physically mature—yearling or older—crows who acted as "helpers," or auxiliaries. The nuclear female incubated the eggs and brooded nestlings. Her mate took the lead in defending the nesting territory and in various foraging activities. The nuclear male and the helper birds assisted with nest building, fed the female while she was on the

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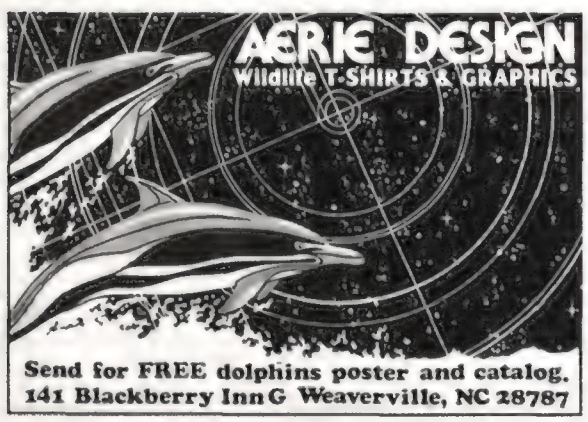

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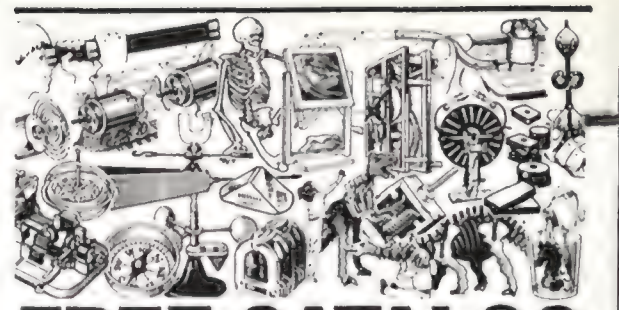

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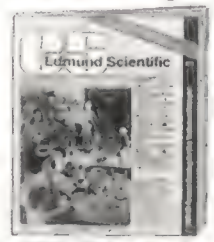

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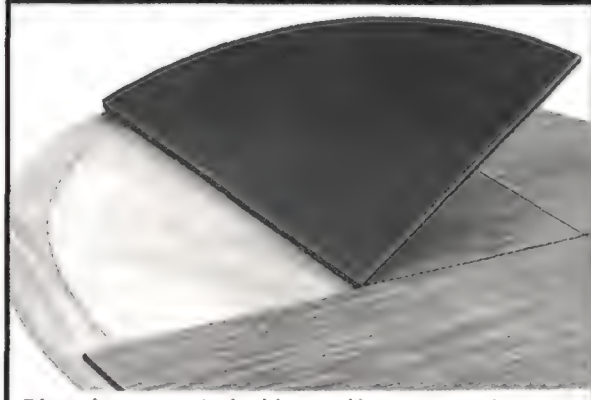

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nest, and also fed the young birds in and around it. This cooperative behavior is similar to, but somewhat more communal than, that which has been observed among chimpanzees and gorillas. "In primates," Kilham notes, "the female does all of the feeding alone . . . whereas all members of a group of crows feed and care for nestlings."

The work of the helpers is of obvious benefit to the mated pair and the nestlings, but Kilham thinks that the arrangement is mutually advantageous to all parties. "While maturing in cooperative groups, individuals gain experience in social interactions with associates that may be older or younger, dominant or subordinate. . . . It takes time for an intelligent and social animal, whether a crow or a primate, to learn the complex life of its species."

Cooperation was not restricted to breeding seasons and situations. Otters were also common in the area and individual ones were often harassed by a group of crows, sometimes in an apparent effort (successful on one occasion) to enable one of the birds to steal bits of fish from the distracted mammal. Occa-

Pulling otter's tail in play may help crows learn to predict behavior.

sionally otters with no food in their possession would be teased by crows seemingly for the sheer excitement of the thing. Surreptitiously one crow would approach a dozing otter and yank on its tail. If the annoyed animal spun around to deal with the first tormentor, a second crow could slip behind it and tweak the tail again.

Kilham thinks such behavior is educational play. The birds seemed to enjoy the sport for its own sake, but it also taught them useful things about the responses of another creature and how to exploit them. Being communards among themselves and, in regard to other species, omnivorous opportunists, crows, Kilham believes, have become impressive natural psychologists, good at predicting and manipulating the behavior of other animals. For one example—among many—the Kilhams sometimes put out corn for their study crows in a particular spot in a field. If they failed to do so, the crows, when they saw the Kilhams approaching, sometimes followed them or went to the feeding station and commenced pantomiming—pecking at imaginary kernels of corn. Reflecting on such an incident, Kilham writes: "An interpretation is that the crows looked upon me as an animal that dispensed corn. Wanting me to do so on a morning when I had neglected them, they followed me, caused me to look around, and then all five, acting together, sought to convey the idea of what they wanted."

I have no idea how well Kilham's soft, serendipitous methods work with viruses, but I share his admiration for—if not knowledge about—crows and ravens. It seems to me that his book is

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the best, most informative and engaging one yet written about how some of these birds live, think and feel. Kilham on crows compares favorably with Tinbergen on gulls, Goodall on chimpanzees, and Lorenz on dogs and jackdaws. The proper behavioral response to books of this sort is to go out and buy them. This rewards authors for such good works and often reinforces their inclination to do others.

Bil Gilbert
Frequent contributor to SMITHSONIAN

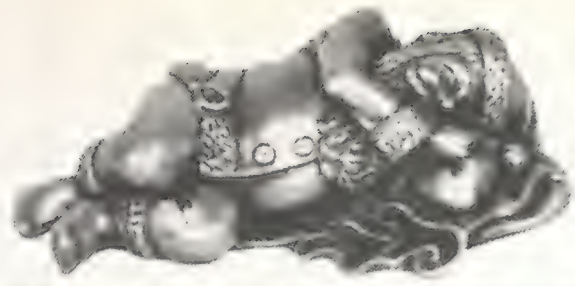
Monuments of Egypt:
The Napoleonic Edition
Edited by Charles Coulston Gillispie
and Michel Dewachter
Princeton Architectural Press, $85

This large, slipcased, two-volume work is itself a monument of Egypt. It consists chiefly of 419 copper engravings of Egypt's monuments made by and for Napoleon's ill-fated Egyptian campaign (1798-1801) in superb reproductions. Included are 30 color plates and 79 double plates.

In addition there are a concordance of plates, a map prepared from the larger maps that were made for the topographical atlas, informative notes and two fascinating, instructive essays by the editors. Gillispie, a professor of the history of science at Princeton, offers a detailed historical introduction about the invasion and its scholarly auxiliaries (some 150 scientists and artists of various sorts who accompanied the invading forces as the "Commission of Science and Art"). Dewachter, of the National Center of Scientific Research and the Collège de France, describes the tons of Egyptian ruins that Napoleon and the auxiliaries shipped back to France, just as Napoleon and some of the same people had recently looted Italy.

In military terms, the Egyptian expedition was a fiasco resulting from military brilliance, a not infrequent phenomenon in military history. On the ground, Bonaparte was his usual dazzling self, taking everything before him and running rings around the dazed mamelukes, who had no idea what they were up against.

The Corsican upstart had, however, totally ignored his rear. Nelson swept into Abukir Bay a month to the day after the victorious—and largely unopposed—landing and destroyed the French fleet. Result: misery.



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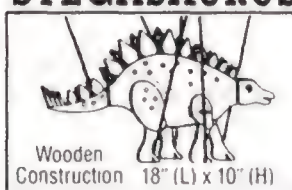

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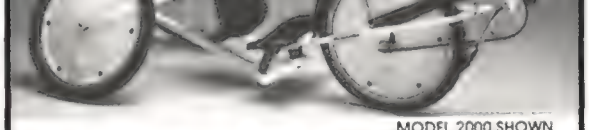

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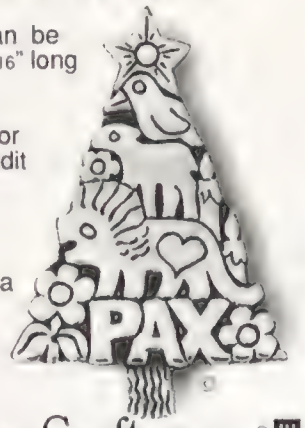

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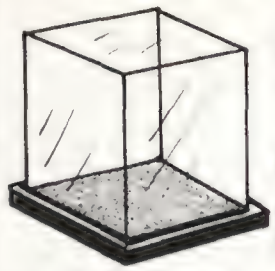

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Politically, astonishingly, the disaster was a complete success. Napoleon, after a year, returned to France a hero, and replaced both the Directory and the joint Consulate with himself as sole Consul-for-Life, and shortly as Emperor. Hardly less astonishingly, the boys he left behind to whatever fate might be theirs, instead of despairing, founded the science of Egyptology, and immeasurably advanced the discipline of archaeology, solidly based then, as now, on grave robbing.

But the most enduring and the most important monument to the expedition is the original 20-volume masterpiece compiled by its scholars, *The Description of Egypt*, of which the book being reviewed may be considered about one-quarter. The set began publication at L'Imprimerie Impériale in Paris in 1809. It was completed (except for the topographical atlas) in 1824, when all things imperial were but a memory, albeit a powerful one, and "Napoleon le Grand," of the book's title page, was three years dead in embittered exile on a barren island in the South Atlantic.

By one of history's familiar ironies, the French found the Rosetta Stone but surrendered it to the conquering British, along with precious little else of the Egyptian boodle. The key it provided was not fully turned in the hieroglyphic lock until much later, so the book is also a treasure house, as Gillispie points out,

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Among the numerous other felicities in the texts by the transatlantic academic team is a detailed exposition of the state of the art of mechanical translation of drawings into copperplate engravings at the time.

Incidentally, the process by which the present publishers have translated those copper engravings onto a planographic surface produces, I think, the best results I've ever seen. There is no tactile perception, of course, but you can count the finest lines and see the varying textures used by artists to copy scenes, and used by Nicolas Conté's engraving machine to copy their art.

Among its many other virtues, this magnificent book reminds us that in placing that glass pyramid in the courtyard of the Louvre, I. M. Pei was really evoking a tradition and a hero, of which and of whom the French remain proud—not to mention some of the most valued contents of the building.

Frank Getlein
Author and critic

Dickens: A Biography
Fred Kaplan
Morrow, $24.95

In his comparatively brief lifetime (1812-1870), Charles Dickens produced 14 long and immensely successful novels (as well as countless shorter works, literary and journalistic alike); fathered ten children; maintained an ever-widening circle of acquaintances and a staggeringly voluminous correspondence; earned high public visibility and adulation as a performer in amateur theatricals, reader of his own writings, and impassioned advocate of liberal social reforms. His "energetic restlessness" and genius for "vigorously combining work and play" enabled Dickens to lead a fuller life than, in retrospect, seems possible—particularly in view of the financial burdens he kept assuming and the barrage of illnesses he bore stubbornly to the end.

Fred Kaplan's replete new biography—the most ambitious and detailed since Edgar Johnson's classic one of almost 40 years ago—focuses a refreshing skepticism on this much-loved figure's colorful posturings and self-justifications. It also reflects a genuine sensitivity to the dizzying contradictions that were Charles Dickens: "a traveling man, alternating between love of hearth and restlessness"; an incarnation of domestic complacency who became the "center of a domestic scandal" that caused him to be accused of both adultery and incest; a great popular entertainer whose fictions are increasingly seen as complex symbolic explorations of a variegated society whose extremes he had experienced.

Already a professional man at 18 (having secured "regular work as a freelance court stenographer"), Dickens quickly metamorphosed into a respected journalist, and thereafter into the author of such celebrated novels as *The Pickwick Papers* in 1837 and *Oliver Twist*, written during 1837-38. Churning out novel after novel, he also traveled to America (which cruelly disappointed his egalitarian expectations), took on backbreaking editorial chores (his magazines, *Household Words* and *All the Year Round*, becoming dependable gold mines), read and lectured and acted and

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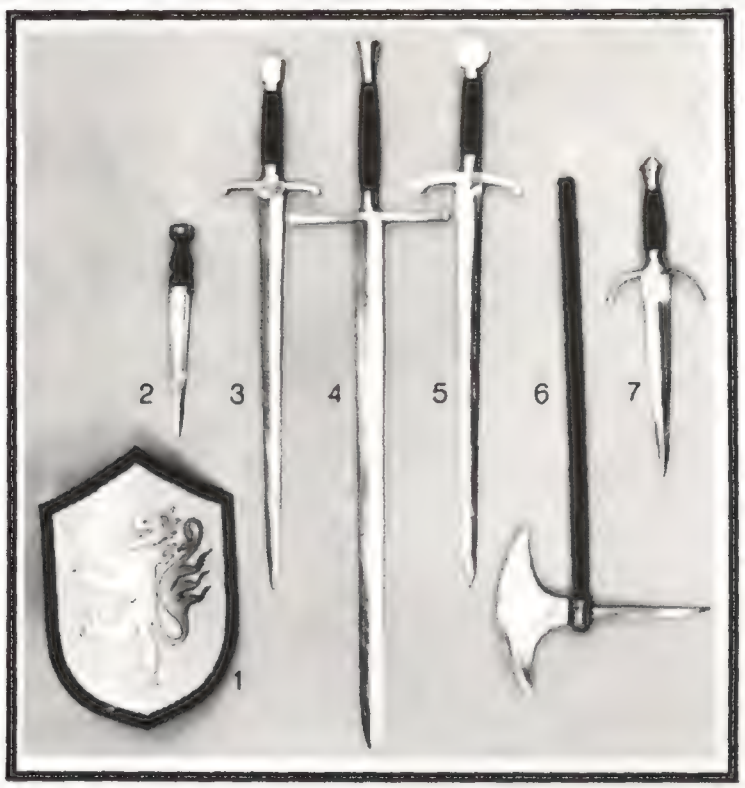

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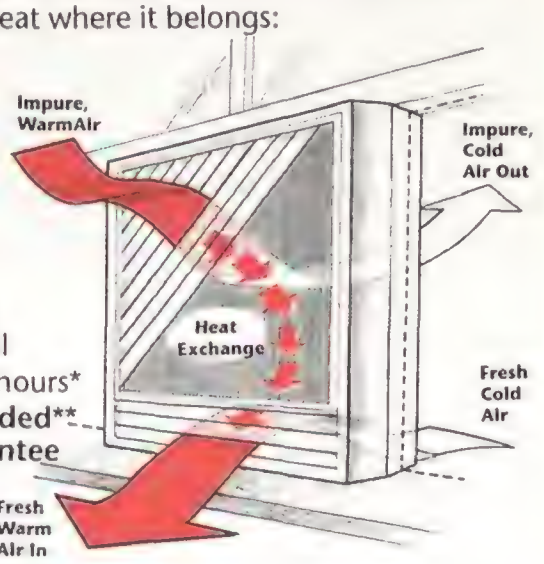

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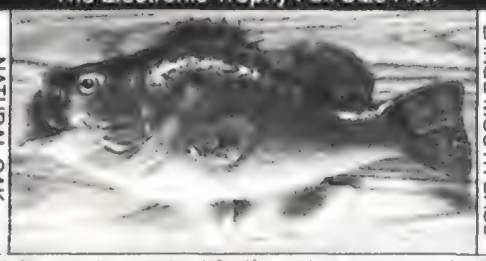

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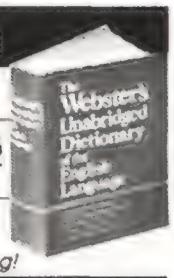

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pontificated with a gusto that—amazingly—in no way compromised his ever-deepening literary sophistication.

Kaplan convincingly locates the sources of Dickens' furious diligence in the runaway "financial difficulties that plagued the Dickens family during Charles' youth," and in his conflicted feelings about a do-nothing father (whose improvidence puzzlingly belied his genial demeanor) and a remote, unloving mother (who clearly influenced the good-and-evil female opposites that appear in his fiction).

Kaplan quotes tellingly both from Dickens' own letters and autobiographical writings (their verbal agility and energy consistently match the qualities for which his novels are distinguished), and from the writings of those who knew and loved him well. And, though this isn't truly a critical biography, it examines Dickens' "sense of being imprisoned in himself" that vibrates throughout *Little Dorrit*, and the "complicated interweaving of truth and fiction" that we see in *David Copperfield*.

There is scrupulous attention to genuinely revealing minutiae. Kaplan's explanations of the byzantine money-grubbing schemes employed by John Dickens (Charles' father) and of the mass of detailed information about Charles' intricate financial arrangements with publishers, printers and illustrators show how firm was the son's resolve to be unlike his father.

Kaplan's chapter on Dickens' early trip to America is remarkably lively and entertaining, his analysis of Dickens' mingled feelings about the fresh young democracy persuasively acute. He's sympathetic to the humiliating sufferings of Catherine Dickens, who seems to have commanded only occasional scraps of her husband's attention. His text is graced with such engaging particulars as an ironical account of Dickens' experiences with mesmerism.

Kaplan sees whole, and renders unforgettably, the complexity of a public man whose private nature was both his torment and his stimulus. For those who love Dickens, this long, absorbing book's revelations of the forces that drove him to excel, and the infuriating character traits he seemed compelled to exhibit, are fully comprehensible, oddly reassuring. They make his achievement appear all the more remarkable.

Bruce Allen
Maine writer and critic

Additional reading

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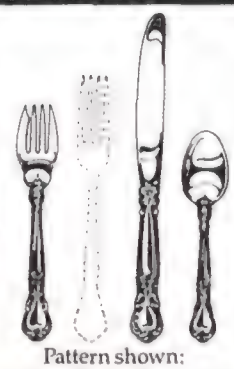

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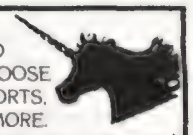

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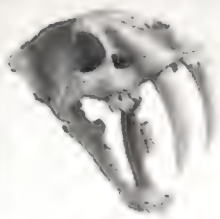

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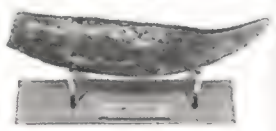

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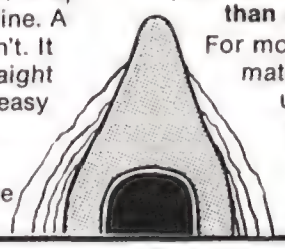

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Castle reopens, Freer remains closed

The Castle reopens with a new Smithsonian Information Center and Associates' Lounge on November 15. Hours are 9 A.M.-5:30 P.M. daily. See *Around the Mall*, page 28. The Freer Gallery of Art is closed until 1992.

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National Museum of African Art
Icons: Ideals and Power in the Art of Africa (through September 3) A survey of African art. See *Highlights continued*, page 254.
The Essential Gourd (through January 4) Northern Nigerian decorative techniques, traditional and contemporary.
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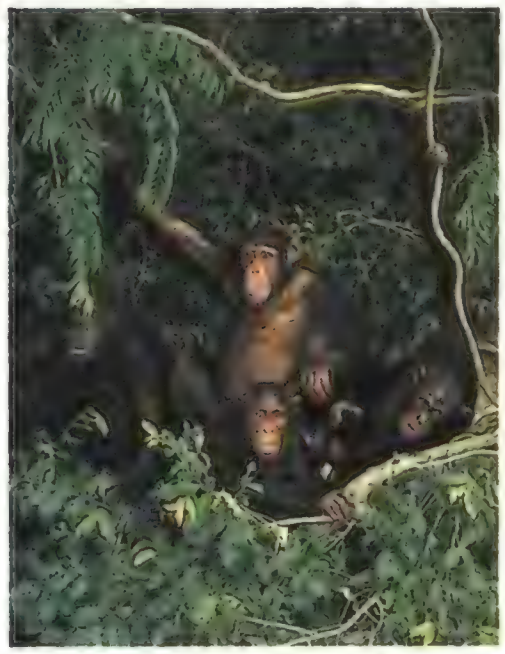
Renwick Gallery
Masterworks of Louis Comfort Tiffany (through March 4) Sixty-two objects, including leaded-glass windows, ceramics, bronzes and paintings.
Slave Quilts from the Ante-Bellum South (through January 1) Thirty quilts, most never before exhibited.



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We used to live in captivity, sharing our lives with humans; but we've begun our new lives, on our own, in the wild.

This group portrait was taken at a favorite resting place of ours in the River Gambia National Park. You can read our story in the cover article of the June 1988 SMITHSONIAN.

We hope our portrait reminds everyone that all beings share this planet. And all of you who care about us can enjoy our portrait by ordering a poster-size copy. Here's how:

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International Gallery,
S. Dillon Ripley Center
Caribbean Festival Arts (through February 15) Costumes, music, videotapes, photographs evoke the sights and sounds of the Caribbean street festival.

National Museum of American Art
Treasures of American Folk Art from the Abby Aldrich Rockefeller Folk Art Center (November 22-February 18) More than 180 objects—paintings to pottery and quilts—from the extensive collection.
The Patricia and Phillip Frost Collection: American Abstraction 1930-1945 (through February 11) Seventy-five works by members of the pioneering American Abstract Artists group.

Arthur M. Sackler Gallery
India Along the Ganges: Photographs by Raghubir Singh (November 23-April 15) Fifty dye-transfer prints by the acclaimed photographer.
The Noble Path: Buddhist Art of South Asia and Tibet (through March 31) More than 100 objects from the Los Angeles County Museum of Art.

National Portrait Gallery
Portraits of the American Law (through January 15) Images of distinguished judges, scholars and courtroom lawyers.
To Color America: Portraits by Winold Reiss (through April 1) The German-born modernist's 1920s and '30s depictions of American minorities. See page 172.
The "Edgehill" Portrait of Thomas Jefferson (through 1992) The painting by Gilbert Stuart, on view for three years.

Hirshhorn Museum & Sculpture Garden
Francis Bacon (through January 7) Sixty works, celebrating the 80th birthday of the British painter.
DIRECTIONS: Susan Solano (November 16-February 11) Works by the Barcelona sculptor.

National Museum of American History
Nature Printing (November 29-November 1990) American prints made from feathers, flowers, ferns, leaves.
Workers and Managers: The Crises of Control in American Manufacturing (through February 25, 1990) Labor history seen through photographs and artifacts.
European Shawls (indefinite) Nineteenth-century wraps from the Museum's Division of Textiles.

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MET MARATHON	December 2
DIE FRAU OHNE SCHATTEN (R. Strauss)	December 9
IL TRITTICO (Puccini)	December 16
IL TABARRO	
SUOR ANGELICA	
GIANNI SCHICCHI	
LES CONTES D'HOFFMANN (Offenbach)	December 23
DER FLIEGENDE HOLLÄNDER* (Wagner)	December 30
	1990
WOZZECK (Berg)	January 6
TURANDOT (Puccini)	January 13
COSÌ FAN TUTTE (Mozart)	January 20
PORGY AND BESS (Gershwin)	January 27
LA GIOCONDA (Ponchielli)	February 3
LA TRAVIATA* (Verdi)	February 10
SAMSON ET DALILA (Saint-Saens)	February 17
RIGOLETTO* (Verdi)	February 24
FAUST* (Gounod)	March 3
50TH ANNIVERSARY CELEBRATION	March 10
MANON LESCAUT (Puccini)	March 17
DIE ENTFÜHRUNG AUS DEM SERAIL (Mozart)	March 24
LA BOHÈME (Puccini)	March 31
DIE WALKÜRE (Wagner)	April 7
DON GIOVANNI* (Mozart)	April 14
GÖTTERDÄMMERUNG (Wagner)	April 21

*New Production

Television

	1989
AIDA (Verdi)	December 27
	1990
TEXACO/MET 50TH ANNIVERSARY HIGHLIGHTS	March**
DAS RHEINGOLD (Wagner)	June 18
DIE WALKÜRE (Wagner)	June 19
SIEGFRIED (Wagner)	June 20
GÖTTERDÄMMERUNG (Wagner)	June 21

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Men and Women: A History of Costume, Gender and Power (through December 1990) An examination of culturally determined standards of appearance, behavior. See *Horizons*, page 10.

National Museum of Natural History
Nomads: Masters of the Eurasian Steppe (November 17-February 18) Landmark exhibition featuring more than 1,000 nomadic artifacts from the major Soviet Union museums.

National Air and Space Museum
"Commuting in the Modern Manner": The Grumman Goose Amphibian (opens November 3) A look back at the 1930s "limousine of the air."
The Aviation Careers of Igor Sikorsky (opens November 16) An overview of the aviation pioneer's achievements.
Carrier War in the Pacific (permanent) Six major battles through models, maps, photographs, films.
Eyewitness to Apollo 11 (through December 31) Paintings, drawings and prints interpreting the moon-landing mission.
Beyond the Limits: Flight Enters the Computer Age A major new gallery explores the computer revolution in aerospace.

Cooper-Hewitt Museum (New York)
E. McKnight Kauffer: Graphic Art and Theater Design (through February 18) Retrospective look at the graphic designer's varied and productive career.
The Intimate World of Alexander Calder (through March 11) More than 300 whimsical works, from toys to caricatures.

Smithsonian on the air

Radio Smithsonian: Programs include features on Smithsonian conservation training in Bolivia, "Jazz Piano" Smithsonian recordings, and the Museum of American History exhibit on workers and managers.
Here at the Smithsonian: Three-minute TV spots take you behind the scenes.

To find out which stations carry these radio and TV programs, write: Office of Telecommunications, MAH Room BB40, Washington, D.C. 20560.

Exhibition catalogs

Catalogs currently available include:
Treasures of American Folk Art (paper, $22.50; cloth, $35)

Masterworks of Louis Comfort Tiffany (paper, $24.95)
Francis Bacon (paper, $29.95; cloth, $50)
Nomads of Eurasia (paper, $24.95; cloth $39.95)
To order, send check or money order to Museum Shops, 3301 75th Avenue, Landover, Maryland 20785. Include 15 percent of total purchase to cover postage and handling (minimum, $1.75).

Lecture and Seminar Program

The Program hosts events in Fullerton and Santa Ana, California, November 2-5. For information on offerings around the country, write to the Lecture and Seminar Program, 1100 Jefferson Drive S.W., Room 3045, Washington, D.C. 20560, or call (202) 357-1350.

Resident Associate Program

To become a Resident Associate, or for fee and ticket information, call 357-3030. Here are some November events:
David Lean: Great Encounters (November 20; 8 P.M.) Biographer Stephen Silverman on the celebrated director.
The Art Songs of Langston Hughes (November 3; 7:30 P.M.) Soprano Marilyn Thompson in concert.
Thelonious Monk International Solo Jazz Competition (November 18, 1 P.M.; November 19, 3:30 P.M.) Young pianists from around the world.

Smithsonian Institution Traveling Exhibition Service

SITES organizes and circulates exhibitions to cities throughout the United States and abroad. To sponsor a show in your community, write SITES, Smithsonian Institution, Washington, D.C. 20560. Here are some November exhibits:
Bettendorf, Iowa (November 18-December 17) *Child to Child: American-Soviet Children's Art Exchange,* Children's Museum.
Hot Springs, Arkansas (November 11-December 10) *Computers in Your Pocket: The History of Hand-Held Calculators,* Mid-America Museum.
Pittsfield, Massachusetts (November 18-December 17) *Vietnam Veterans Memorial: A National Experience,* Berkshire Museum.
Roswell, New Mexico (November 18-December 31) *The Santa Fe Trail: Photographs by Jean Myers,* Roswell Museum.

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Resonant images from Africa

Across the centuries, certain themes and images—echoing hopes and needs, fears and triumphs—have reverberated through the art of sub-Saharan Africa. The motifs are universal: the male and female couple, the weapon-bearing male, the woman with child, the rider, the stranger or outsider.

These five emblematic subjects are the focus of "Icons: Ideals and Power in the Art of Africa," at the National Museum of African Art. The exhibition, conceived and organized by University of California, Santa Barbara art historian Herbert M. Cole, spans a millennium of creation. More than 120 works, including sculptures, paintings, ceremonial banners and etchings, range from ancient Malian terra-cotta figurines to canvases by contemporary African artists.

A 25-minute film, shot on location in Mali by Washington, D.C. filmmaker Stanley J. Staniski, and two videos have also been made in conjunction with the comprehensive show. These productions, running continuously, will offer a window on art and performance, past and present, in Mali.

The exhibition, accompanied by a book written by Cole and published by the Smithsonian Institution Press, continues through September 3, 1990.
Kathleen M. Burke

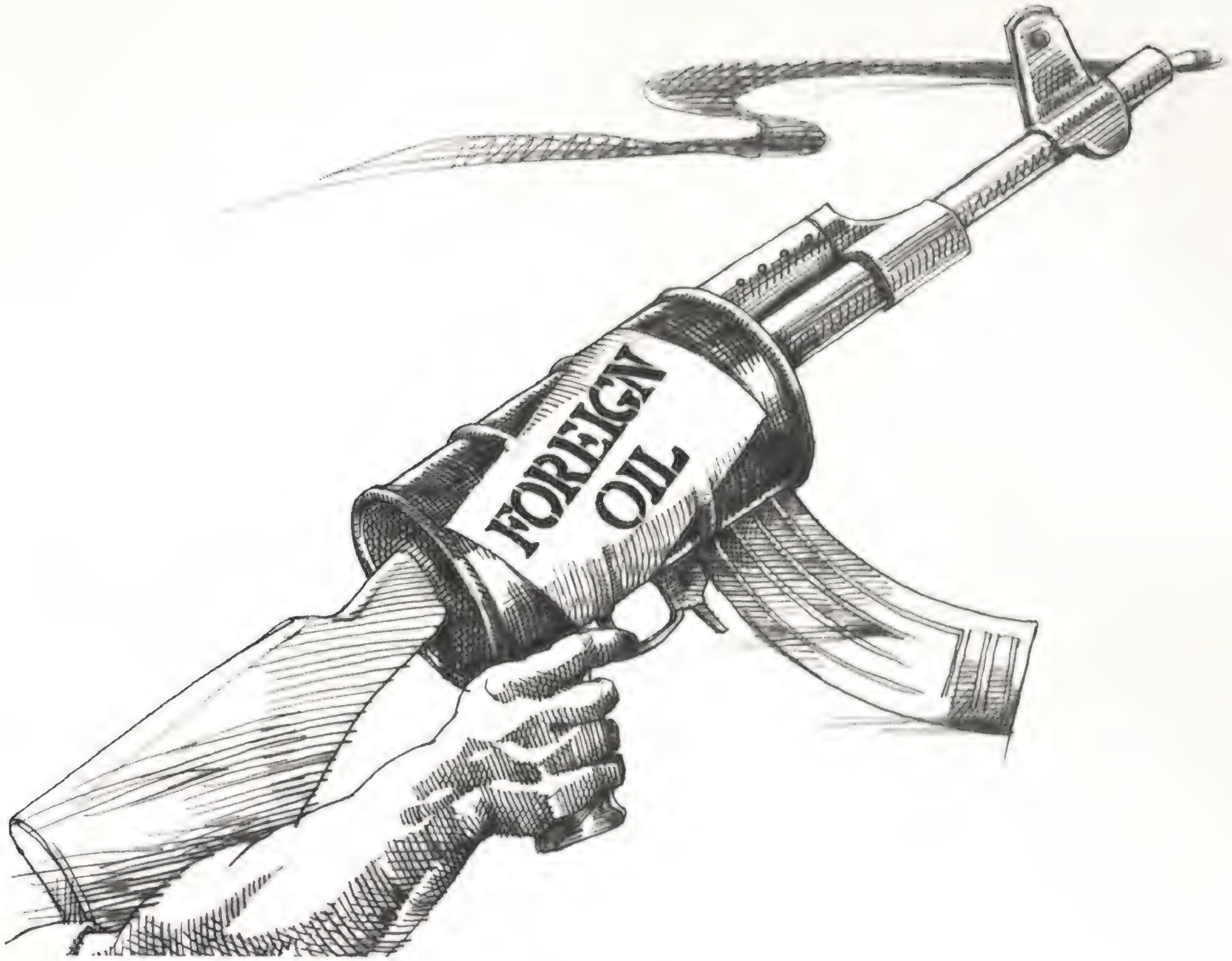
Flag appliquéd with a woman, children, was a military banner, Ghana, 1930s.

Artist Ibanehe Djilatendo painted *Deux Chasseurs*, a fanciful hunting scene, in Belgian Congo (Zaire), 1931.

Niger delta terra-cotta figurine, c. 1250, was excavated near Jenne.

Painted-wood sculpture, 1930s, was crafted as centerpiece for Igbo festival dances in Nigeria.

Villagers displayed this reliquary figure, c. 1900, at Congo funeral for a venerable personage.



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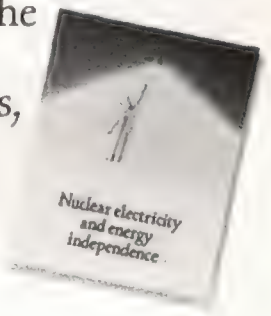

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Christmas in Santa Fe *December 20-26*

Christmas in Asheville *December 22-26* Celebrate the holiday at historic Grove Park Inn and elegant Biltmore estate.

Everglades *January 30-February 7* Swim, fish, camp and canoe in the tropical Ten Thousand Islands.

Hawaii *February 3-13 or February 24-March 6* Nature tour of Oahu, Hawaii and Maui.

NEW Birds of South Texas *February 17-24* Enjoy warm sunny days while learning birding techniques at several wildlife refuges.

Baja Whale Watch *February 23-March 3* Explore islands from San Diego to San Ignacio Lagoon.

NEW New Orleans-Natchez *March 4-11* Visit plantations and gardens.

Death Valley *March 13-22* Mountains and canyons of the Mojave Desert.

Charleston-Savannah *March 18-25 or March 24-April 2* Historic homes and gardens.

Big Bend, Texas *March 24-April 2* Hike this wild scenic park; visit McDonald Observatory.

Arizona in Spring *April 18-26* Cacti and wildflowers in bloom from the Sonoran Desert to the Chiricahua Mountains.

Spring Gardens *April 26-May 3* Study historic gardens in Washington, D.C. and the Delaware Valley.

NEW Spirit of the Southwest *May 19-29* Hopi and Navajo culture in the Four Corners region. Includes Mesa Verde and Canyon de Chelly.

NEW Canyons of Time *May* Majestic beauty of Monument Valley and Arches, Canyonlands and Capitol Reef national parks.

Foreign Study Tours

NEW Winter Interludes Uncrowded museums, cultural events and leisurely exploration in Paris, London, Venice, Vienna, Barcelona, Lisbon, Prague or Kyoto.

Smithsonian Christmas Holiday Stay in Canterbury, Winchester or Switzerland.

Mesoamerican Study Programs *January-March* Archaeological treasures of the Yucatán, El Tajín, Guatemala or Oaxaca.

Siberian Winter Odyssey *January 10-27* Includes Moscow and Leningrad.

South American Voyage *January 17-February 4* Around the Horn on the *Seabourn Spirit.*

Caribbean Cruise *January 18-27* Aboard the *Sea Cloud*, sail the leeward islands.

NEW Dakar (Senegal) *January 20-February 3* History, culture, arts in West Africa.

India Wildlife Safari *January 23-February 20*

Kenya-Tanzania Wildlife Safari *January 25-February 11* Unique journey in East Africa.

Leningrad Arts *January 28-February 10* Fine and decorative arts, superb museums.

European Countryside Programs *February-October* Relax in scenic and historic areas of Austria, Denmark, England, France, Greece, Hungary, Italy or Wales.

Australia-New Zealand *February 4-25*

NEW Far East Express *February 7-27* Singapore, Malaysia, Thailand by train.

Milford Track *February 22-March 11* Hiking and natural history in New Zealand.

Performing Arts of Russia *February 23-March 9* See the Kirov and Bolshoi ballets.

Red Sea Passage *February 28-March 12* Egypt and Jordan including Luxor, Cairo and Petra.

NEW Trinidad and Tobago *March 3-13* A birder's paradise in the West Indies.

Costa Rica *March 4-17* Learn about flora, birds and other wildlife in the tropics.

India Arts and Crafts *March 7-April 3* Focus on village artisans, local crafts.

Budapest Music *March 14-25* International performances, museum visits, excursions.

NEW Jamaica *March 17-27* Culture and customs of this West Indian island.

Sea of Cortés *March 18-25* Cruise Mexico's Gulf of California—blue whales, wildlife.

British Theatre *March 22-April 1* Attend traditional and avant-garde productions, meet performers backstage.

NEW Berlin—East and West *April 11-25*

NEW Van Gogh Centennial *April 20-May 5* Van Gogh in Amsterdam, Paris and Arles.

NEW Egypt and the Nile *April 24-May 11*

NEW Morocco Treasures *April 28-May 12* Casablanca, Fès, Marrakech and more.

NEW Southern Italy and Sicily *April 28-May 13* Culture, art and history.

Zimbabwe-Botswana *May 8-25* Includes Victoria Falls and Okavango Delta.

Istanbul and Beyond *May 9-24*

NEW English Gardens *May 12-25*

Two Chinas *May 20-June 2* Includes Hong Kong and Taiwan.

Spring Voyage *May 24-June 7* Cruise from Seville to Southampton.

Smithsonian Seminars

Explore diverse topics in depth with top scholars during classroom study and tours.

Air Power and the Battle of Britain *January 16-19* Washington, D.C.

Icons: Ideals and Power in African Art *January 17-19* Washington, D.C.

Explorations in Marine Biology *February 4-8* Fort Pierce, Florida. Study with scientists at the Smithsonian research station on Florida's east coast.

America's Future in Space: Manned or Unmanned? *March 12-15* Washington, D.C. Includes Goddard Space Flight Center.

American Coins and Currency *March 20-23* Washington, D.C.

Write to Smithsonian National Associate Program, Washington, DC 20560 or call (202) 357-4700 for tour and seminar brochures.

SMITHSONIAN-STYLE

Animal Communication *April 2-5* Washington, D.C. Observe and learn with experts at the National Zoo.

America's Art *April 24-27* Washington, D.C. Survey 19th-century masterpieces with art historian William Kloss.

20th-Century Furniture *April 30-May 4* Washington, D.C. Includes visits to working studios and private collections.

The New Astronomies *May 13-18 or May 20-25* Arizona. Study with astronomers at the Smithsonian's Whipple Observatory.

Masterpieces of French Impressionism *May 18-20* Washington, D.C. See special exhibitions at the National Gallery of Art.

Research Expeditions

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Cancún, Mexico *February 16-26 or February 27-March 9* Study birdlife and vegetation.

Washington, D.C. *March 4-16 or July 22-August 4* Archive historic aviation documents at the Air and Space Museum.

Costa Rica *March 31-April 12 or April 14-26* Monitor Arenal Volcano's eruptions and study local vegetation.

Washington, D.C. *May 23-June 6* Photodocument Memorial Day activities.

Washington, D.C. *June 6-16* Prepare anthropology collections of animal bones for transfer to a new facility.

Washington, D.C. *June 25-July 8* Photograph the Festival of American Folklife.

Montserrat *July 1-14, 15-28 or July 29-August 11* Excavate slave quarters and a cemetery at a Caribbean sugar plantation.

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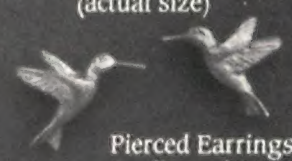

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By John Skow

Kick a radio and call me in the morning

I met a young woman a few years ago who was into, as she put it, primal scream therapy. I have never cared much for the "into" construction. When someone tells me he is into yogurt, I want to throw him a rope. But the young woman I mentioned certainly was into primal screaming, and she had barricaded the door from the inside and pulled down all the shades.

Circumstances had thrown us together in one of those family situations in which some polite conversation is necessary. That was OK with her, she said, as long as we kept it light. Her therapist had explained that until a person had done his primal screaming—a matter, I gathered, of lying on the floor, hugging the ankles, and howling out one's rage at his parents for putting him through the pain and indignity of being born—he was operating on only about 5 or 10 percent of his brainpower. After screaming, brain efficiency increased enormously, and so, said my young acquaintance, there really was no point in having any heavy discussions with non-screamers. The gap in effective intelligence was so great, I understood, that if she went beyond chitchat with someone whose mind still had not been Roto-Rooted, it would be like trying to explain Hegel to a Labrador retriever.

We managed to get through the weekend without falling into the gap and I never saw her again. I have never felt overburdened with brainpower, and I might have been tempted to try primal screaming myself, to clear the carbon deposits out of my skull, if I had not had a pretty clear idea of what my mother would have said. She would have taken the position, I feel sure, that the inconvenience attending my birth was hers, not mine.

Anyway, I am partial to my own therapy. It is not the group kind, although some of those seemed to have been more fun than a night out with the bowling team, according to people who were joining encounter groups a couple of decades ago. My therapy is called radio kicking, and it requires a little explanation.

Once upon a time my wife and I lived in New York City and drove each winter weekend to a small ski house we owned on Lake Memphremagog, on the Canadian border of Vermont. The round trip was about 800 miles, and it restored our souls. Weekends of this kind are crazy, but there is a good deal to say for craziness two days a week, especially when your employer prefers that you stay sane for the other five.

All was well until we invited a dozen friends up for the New Year's weekend. In fact, all was well through most of the weekend. Our friends were cheerful, congenial people, except for one sod who was taken drunk, imagined himself to be insulted and had to be driven to Montpelier to be put on a train at 4 in the morning. I had the angry fellow pretty well calmed down by train time, and the next morning I soothed the other party to the quarrel. I also put out a chimney fire, jump-started two cars, adjusted ski bindings for the 11 remaining guests, parceled out spare parkas and long johns from the slop chest, gave beginner and intermediate ski lessons at Jay Peak, got the fire started in the Franklin stove when we returned, and made separate runs to the supermarket and the liquor store. The toilet overflowed, but I got the outlet pipe unfrozen with a blowtorch and some heating tape. I wrapped Ace bandages for the wounded and mixed drinks.

This sort of recitation is not news for householders in New England, and I have thought from time to time of earning big money with a book called *What to Do When Houseguests Strike.* At any rate, the weekend went on this way, fairly enjoyably if acute stress is your idea of fun.

We drove back to Manhattan through a sleet storm, and found a double parking space in front of our apartment at about 3 A.M. As I slogged into the apartment, carrying a large load of miscellaneous clutter, a pair of skis I had wedged under one arm jammed against the doorframe. The shock dislodged a portable radio that was balanced at the top of my armload. The radio fell to the hallway floor and landed with an expensive noise.

Generally I hesitate at life's crossroads, seeing disadvantages in each path offered, but now I moved like a mongoose. Fierce and splendid rage seared downward from that quadrant of my brain that governs exasperation. Therapeutic energy flowed into my right foot, which swung back, swung forward again and caught the mutinous radio amidships, just above the waterline. I am not a great natural athlete, but this kick was one of pure animal grace. The radio rose in a fine arc, sailed down the hallway, crossed the airspace of the living room and struck high on the wall. Then it slithered to the floor like a broken egg.

My wife, who may have been feeling some exasperation herself, opened her mouth as if to make a comment. Then she shut it again, without speaking. I said nothing, poured each of us a drink (this is a part of the radio-kicking therapy that must not be overlooked) and went to bed.

Shallow thinkers might suspect that when I awoke in the morning, I was mired in remorse. Not at all. For the next two weeks I walked around feeling like a man who had won the Nobel Prize in Bioserenity.

Since then I have kicked an electrical appliance—generally a radio, sometimes a small television set and once a sullen toaster—every three or four months. I am known for my stability from Wilmot Flat to Springfield, New Hampshire, and I have lived happily ever after.

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